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THE BEST METHOD OF PROVIDING AN EFFICIENT
FORCE OF OFFICERS AND MEN FOR THE NAVY,
INCLUDING THE RESERVES.

By Captain LINDESAY BRINE, R.N.

"Tempora mutantur, nos et mutamur in illis."

WHAT are the best methods of obtaining in time of peace a Navy and a Reserve that can be rapidly developed into a powerful force in time of war? What force is required to maintain our naval supremacy, to protect our colonies and Mercantile Marine, and prevent the command of the Channel from falling under the control of an enemy?

All the other great maritime Powers of Europe have determined to avail themselves of the services of their seaboard populations, and have adopted, in more or less stringent degrees, systems of inscription and conscription for the purpose of manning their fleets. These systems are made to correspond, as far as possible, with those that regulate their compulsory military services, and are consistent with the institutions of the respective nations. Great Britain stands alone in having to provide for the manning of her great fleets by the method of voluntary engagement, and successive Governments and Boards of Admiralty have shown constant anxiety in endeavouring to establish a system of manning which would place our naval power in a position of unquestionable security.

During the long period of tranquillity and general disarmament of Europe, subsequent to 1815, our fleets were maintained upon a peace establishment. Our ships were manned by short service men, who volunteered for the commission and left when their ships were paid off, and there were no means for establishing efficient reserves or for rapidly augmenting our force. It was considered that, in the event of

an emergency occurring, volunteers would come forward in sufficient numbers, and as a final resource it was always possible to obtain men by impressment. It was, however, gradually made evident that these methods were most insecure and inexpedient.

The revolutionary state of Europe during 1848 pointed to the necessity of our having a fleet capable of immediate preparation for war, and in 1852 the Admiralty were so dissatisfied with the length of time occupied in obtaining crews for ships when commissioned, that the Duke of Northumberland, who was then the First Lord, thought it desirable to form a Committee to inquire into the subject. The Report of this Committee led the Admiralty to consider a plan for establishing a system that would give a more permanent character to the Navy, and in 1853 the continuous service principle was adopted, and has been carried into effect with slight modifications. This system as then proposed continues to be the basis upon which the manning of the Navy rests.

In their letter to the Treasury respecting this scheme, the Admiralty dwelt with much force upon the difficulties and uncertainties of all previous methods of manning, and drew especial attention to the serious danger that existed in consequence of their inability to equip Her Majesty's ships with sufficient rapidity, and in bringing to the consideration of the Treasury their propositions, which involved an additional grant of money, they dwelt upon the great advantages that would result when the continuous system was in complete operation. "It is essential," their Lordships observed, "to give to the Royal Navy a permanent constitution, in order that it may be brought to a higher point of organization, efficiency, and discipline, and thus be enabled at critical junctures to fulfil the expectations of the country."

The practical results of this continuous service scheme as now developed will be presently examined, but the whole subject of manning the Navy, and of establishing an efficient Reserve, both before and since the suggestions of the Committee of 1852, has been so much obscured by a too great estimate of the fighting value of the *personnel* of our Mercantile Marine, that it is in the first place necessary to examine the basis upon which our strength in men as a naval Power depends.

It appears that the largest number of men that have at any time actually been borne upon the books of Her Majesty's ships was in the year 1813. The vote was taken for 108,600 seamen and 31,400 marines, but the total numbers borne were 147,047. During the eight years of peace that preceded the Revolutionary War the average numbers annually voted were 15,035 seamen and 4,590 marines. The smallest vote taken was in the year before the war, when the numbers voted were 11,575 seamen and 4,425 marines. In the same year the whole number of men serving in registered ships belonging to the British Empire—that is to say, employed in our Commercial Marine—was 118,286, and in 1813, when fully 115,000 seamen were employed in the Navy, there were 165,537 men in the Merchant Service.¹

¹ These numbers include Officers.

Judging from the Return¹ from which these figures are taken, it is evident that the methods adopted for manning our fleets did not greatly embarrass our merchant shipping.

In 1805, the year of Trafalgar, the number borne in our Fleet was 114,012, and in the Mercantile Marine 157,712. At the time when Lord Howe fought the action of the 1st of June, 1794, our fleets were mainly composed of seamen volunteers (many of whom were of different nationalities), of men gathered by impressment, and of landmen and others, attracted by bounties or the hope of prize-money. To these were added by Mr. Pitt's Government a number of men raised by a system of "quota," furnished by each parish in the kingdom, and also by a special compulsory conscription from the maritime counties.

The crews of the French Navy were at the same time composed of equally untrained elements. The resources of the Maritime Inscription, which were then not so great as at present, were soon exhausted, and the fleets were filled with men of the roughest and most undisciplined character, gathered from the seaports during the period when the revolutionary excitement had produced large bands of lawless desperadoes. A considerable part of the crew of the "Vengeur," who fought so well on the 1st of June, was formed of men who had never been to sea until they left the port of Brest to encounter the fleet under Lord Howe. The greater number of the crews who had embarked in our fleets were neither seamen nor in any sense trained men, but they soon became valuable, through the constant experience gained by long periods of active service at sea. The constant practice of seamanship caused by the long blockades, and the rigid system of discipline enforced by Lord St. Vincent, soon established a splendid force of seamen, which formed the nucleus round which the newly raised ships' companies were gathered during the latter years of the war.

After 1815 the number of seamen annually voted for the peace establishment varied from 13,000 to 22,000, according to the political state of Europe, but the average vote for marines was usually taken for 9,000 men.

1834 was the first year in which a vote appears for the entry of boys. This vote was increased to 2,000 the following year, and was maintained at that number until the recommendations of the Committee of 1852 were carried into effect, when the vote for boys was increased to 10,000.

This was in 1855, during the war with Russia, when the numbers voted were 44,000 seamen, 10,000 boys, and 16,000 marines. The number employed in our merchant vessels was in the same year stated to be 261,194.

Early in 1852 the "Southampton," one of our 50-gun frigates, arrived in England from the Brazils, where she had carried the flag of Rear-Admiral Barrington Reynolds, and after a commission of nearly

¹ "Return of the Number of Seamen (including Officers), Boys, and Marines voted for the Royal Navy, and actually borne, together with the Number of Men employed in the Commercial Marine from the year 1756 to 1858, inclusive."

four years, her fine crew were paid off. Considerable attention was drawn to the fact that a large proportion of her petty officers and able seamen had decided to quit the English Navy and take service in America under the flag of the United States. It was also observed that there was an increasing difficulty in obtaining men for our ships when commissioned. It may here be noticed that in this year the number of men serving in our Mercantile Marine was stated to be 243,512. The length of time then occupied in getting crews for our ships was becoming intolerable. Our line-of-battle ships were waiting three or four months before they were able to go to sea, and even when our smart 26-gun frigates, of the "Vestal" and "Spartan" class, were directed to be fitted out, it was not without vexatious delay that the ships were able to quit England. At that time there was a positive sense of relief felt on board a ship when the complement of marines arrived from barracks and settled down to their duties, as for a considerable time they formed the backbone of the ship's company.

To obtain seamen for each ship when commissioned, Officers were sent to the chief ports to enter men. Rendezvous houses were established, placards were posted in all public places, and every possible inducement was offered to get men to join. It, however, soon became evident that the majority of the men who usually constituted our crews in the Navy were those who did not to any great extent especially attach themselves to our Merchant Service, but as a rule preferred serving in men-of-war. At the same time they liked the freedom of changing and selecting their ships, and this sense of freedom went so far as to cause men to think too lightly of their nationality, and thus many of our best seamen, trained in our ships-of-war, were known to be serving under the flag of the United States, and it was a question much debated at the time whether in case of hostilities we could be certain of the loyalty of our men.

The *personnel* of the Navy at the time of the introduction of the continuous service scheme may thus be summarized: the number of seamen under the authority of the Admiralty, exclusive of those employed in the Coast Guard, and also exclusive of landsmen, apprentices, and boys, was estimated at about 14,000 petty officers and able seamen. Of these about one-fourth were steadily serving to complete twenty-one years' service and obtain a pension. The remainder were composed partly of men of various terms of service, who quitted the Navy for a time at the end of a commission and re-entered, and partly of men who, disliking the discipline and the gunnery exercises, left to join merchant ships under the English or American flag, and whose services as trained men were thus lost.

In their letter of 21st March, 1853, to the Lords of the Treasury, the Admiralty pointed out the unsatisfactory results produced by this difficulty of inducing seamen to serve voluntarily for long periods.

"The difficulties," they observed, "are inherent in the system itself, which consists in entering them for particular ships selected by themselves, nominally for five years, but practically, according to immemorial usage, for three years service, unless the ship be detained on a foreign station for a period longer than three but less than five years, and then after much expense, time, and labour bestowed in

training them, they are disbanded, and are often lost to the Service. A certain portion of the men thus discharged never return to the Navy. Some carry the fruits of their training to foreign flags, the larger number return at periods dictated by their own inclination or convenience, and not by any regard to the wants of the Service."

The Report and the recommendations of the Committee in 1852, upon which the letter was based, created an entire change in the training and constitution of our men-of-war's men.

The old classes of our fighting seamen were destined to become extinct, and their places are now occupied by a body of lads and men in many respects different and dissimilar. The men who manned our old sailing line-of-battle ships, frigates, and brigs, were at sea good seamen, brave, daring, and self-reliant; on shore, thoughtless and extravagant. They were powerful in physique, most capable in handling sails, and ships in stormy weather; disliking gunnery, machinery, and musket drill; fond of change, and yet proud of the ships in which they had volunteered to serve. These men are gone, and the type can never be reproduced.

The change, although great, and in some respects serious, cannot be regretted, for such men would be utterly unsuited to the altered character of modern warfare, and they had not the intelligence that is now required to form trained petty officers and seamen gunners. The opinion expressed by the Board of Admiralty with respect to the inadequacy of our means for manning a fleet in time of war was soon to be verified. In 1853, the fleet in the Mediterranean was largely increased to meet the exigencies of the approaching war with Russia; and when in 1854 it was thought necessary to send a fleet into the Baltic, the defects of the system of manning were immediately evident. There existed no power of expanding an establishment sufficient for peace purposes, into a Navy prepared for a great war. The entire manning power was exhausted in maintaining the fleet in the Black Sea.

The Coast Guard Reserve was not then the valuable force it is at present, and in order to supply men for the Baltic Fleet, the Admiralty were obliged to man the ships with crews largely composed of landsmen, who were entirely untrained, and were for all practical purposes absolutely valueless. France had also employed all her available men, exclusive of the Reserves, in maintaining her large fleet in the Black Sea—a fleet that was in all respects, in ships as well as crews, equal to our own. But when she was required, as our ally, to send a second fleet to the Baltic, she called out her Reserves from the Maritime Inscription, and manned her ships with such of her coast fishermen¹ as had completed their period of compulsory active service in the Navy, and thus her ships were manned with a strong body of trained seamen, all accustomed to the discipline of a man-of-war, and all familiar with the exercise of their great guns.

The establishment of the present Continuous Service Regulations, together with certain existing schemes for raising and maintaining a Naval Reserve that would adequately man the Royal Navy in the event

¹ The greater part of the fishermen were then absent at the deep sea fisheries.

of sudden hostilities, have been the result of the recommendations of the Committee appointed by the Duke of Northumberland in 1852, and of the Report of the Commissioners directed in 1858 to inquire into the best means of obtaining seamen during peace, or in the case of emergency of war.

Before examining in detail the actual results that an experience of more than twenty years of the practical working value of these systems has produced, it is expedient to ascertain what are the methods of manning that have been found either to have failed, or that have been considered to be in these days impracticable. It has to be noticed that previous to the existing system, all schemes for obtaining men with certainty in the emergency of war were of a compulsory character; of these, impressment was considered to be the most certain and satisfactory. The other plans, executed in pursuance of various Acts for raising men in the counties and commercial ports, were not found to produce men sufficiently trustworthy or useful. The importance attached to the power of impressment is apparent by a reference to the evidence given in 1852 by Admiral of the Fleet Sir Byam Martin. In the reply to the question, requesting him to suggest a substitute for the power of impressment such as would meet the altered feeling of the country, he said:—

"My decided opinion is, that it is not within the compass of human contrivance to light upon any scheme equivalent to impressment as a means of bringing the seamen together with the rapidity which a general armament must ever require. If we part with that means of sending forth our fleets with the alacrity and in the overwhelming strength which so astonished and confounded the nations against which we armed in 1787, 1790, and 1791, England will no longer be what England was on those occasions, and we shall have the mortification to see the French, for the first time, beforehand with us, by means of their maritime conscription, which is, in fact, impressment under a somewhat milder name."

Admiral of the Fleet Sir George Cockburn, who was also asked the same question, replied:—

"I am decidedly of opinion that the power of the Crown to authorize recourse to impressment of seamen in cases of necessity, should not be interfered with."

The Manning Committee were, however, so convinced of the difficulties that might arise in attempting to carry out impressment, as a regular means of supplying seamen, that they reported that every means should be pursued on the preferable method of a voluntary principle, with a due regard to economy.

In 1852 and 1859, the ships comprising our fleets were of so different a type to those of the present time, and the crews required to man them were of such a different character, that the then expressed opinions of many Officers of experience respecting the value of impressment bears more directly upon the Navy of the past than upon the Navy of the future. It may be assumed now as unquestionable, not only that the power of impressment as it existed in the wars with France and Spain could not be successfully enforced, but that its application would be comparatively without value, for a promiscuous collection of landmen and untrained seafaring men, suddenly placed on board an ironclad, would be worse than useless; in fact, they

would be a cause of danger. The advantage of retaining the power of impressment is in the case of a prolonged war, when there was sufficient time to give a certain amount of gunnery training at the home ports before the men were embarked; under any circumstances the power of the Crown to demand compulsory service should never be left in doubt. The Commissioners, in the concluding paragraphs of their Report to the Queen in 1859, lay down the principle very distinctly in the following observations:—

“When, however, everything shall have been done which prudence can suggest to furnish in time of peace reserves available on the outbreak of war, there will still remain, as a last resource, your Majesty’s undoubted right to the compulsory service of your Majesty’s subjects by sea as well as by land, in case of actual danger to this country.”

The ultimate resource of impressment is thus maintained.

Another compulsory plan of obtaining seamen, based upon a system of ballot, was brought to the notice of the Committee of 1852, and was also examined by the Commissioners of 1859, but, although containing suggestions of great value, it was not adopted or recommended. The chief principle of the ballot scheme was to obtain a sufficient number of seafaring men for the requirements of the Navy in time of war, without having recourse to the severe and sweeping method of general impressment. The plan proposed was that after the services of all seafaring men have been called for by proclamation from the Crown, all such men shall present themselves for ballot, and the number required having been taken, the remainder are exempted from the action of the proclamation, and are made free from service. This plan, it was urged, would take away from the harsh and compulsory character of impressment, and yet yield a sufficient supply of men. The scheme was not, however, considered advisable, chiefly upon the ground that it would be difficult to apply the ballot to a floating or non-resident class of the population. This objection would probably be found insuperable when applied to the seamen of the Mercantile Marine, but there is no reason why a system of ballot might not be found advantageous if applied to our fishermen and boatmen.

It certainly would be equitable, and by taking a percentage according to what was required, the number raised would be sufficient for the wants of the Navy, and yet the interests of the maritime classes would not be unduly injured.

In order that such a ballot system should work correctly it would be necessary that a register, such as exists in the other maritime Powers of Europe, should be taken of fishermen of all classes, of boatmen, and others occupied in seafaring pursuits on the coasts. Such a registration might prove to be most valuable, and this addition to the knowledge of the maritime resources of the Empire should certainly be at the disposal of the Admiralty.

The investigation of the Committee, however, clearly led to the conclusion that it was time for an entire reorganization of the system of manning, and also for the adoption of a voluntary reserve, and in proposing their scheme they also quoted the opinion of the Financial

Committee of the House of Commons appointed in 1828, and which is thus given :—

“The establishments of this country should be regulated, not with reference to the unusual circumstances of the late war, or to the probability of being called upon to make a similar exertion, but rather with reference to the policy of depending mainly on our Navy for protection against foreign invasion, and for the means of attacking our enemies.”

The scheme of general and continuous service, which was recommended by the Committee and was adopted by the Board of Admiralty in 1853, is still the method in force for manning our Navy, and the occasional alterations, that have been from time to time made by successive Boards, have been in minor matters, and have not affected its broad principles.

The system as at present in operation is so well understood that it is not necessary to notice its regulations in detail, but as it has entirely altered the character and the class of men who now man our ships-of-war, it will be expedient to ascertain its comparative value in supplying efficient and able-bodied men for actual service afloat, and also its power for maintaining a trained and disciplined Reserve.

It was considered that the organization of a permanent Navy rested chiefly upon the entry of boys, and it was expected that by giving those boys the advantage of an early training on board ship, they would, from habit and association, become attached to the Service, and that they would eventually, through their education and continuous training, become a most valuable force. But as it is evident that the expense and trouble of this training would be of no avail if boys were permitted when grown to manhood to have the choice of leaving or remaining, it was required that they should enter into an engagement to serve for ten years from the age of eighteen, and that at the expiration of that period they were given the option of leaving or continuing to serve to complete the time of service required to entitle them to obtain a pension.

The prospective advantages, offered to those who volunteered under the new Regulations, were very considerable. Men were allowed to count their time for pensions from the age of eighteen instead of twenty, and only to serve twenty years instead of twenty-one. Liberal rates of pay were fixed, and a higher class of able seamen was established under the name of “leading seamen;” separate messes were given to the petty officers; the position of the warrant officers was also greatly improved. In consequence of these measures, it was found that there was no difficulty in obtaining the annual number of volunteers required; and now that the continuous service system has been in good working order for nearly thirty years, and seeing that it has never failed in maintaining the establishment of seamen voted by Parliament, it must be considered to be a successful method of manning. There are, however, certain faults in its results which, being inherent in the system, must always exist so long as the system is maintained intact. The greatest and most serious of these is that of crowding our ships with lads, who, although well-trained and educated in the training ships at home, are not, either by age or by physique, sufficiently able-

bodied to perform with efficiency the duties they might be expected to fulfil in time of emergency. The second grave fault in the continuous service scheme is that of the expense. The cost of the training system, and the expenditure on account of the pensions, form a considerable charge upon the Navy Estimates. It is, however, to the extreme youth of the complements of our ships in commission that attention has chiefly to be drawn, and this is a subject of the greatest importance.

Upon an examination of the Returns since the commencement of the system, it appears that the annual numbers of boys entered have averaged approximately 3,000, and the total number of boys in the Service have varied from a maximum of 9,265 in 1861-62 to 4,700, the number voted for the year 1881-82, and are increased or decreased according to the requirements of the Service.

A Return furnished to the House of Commons by the Admiralty in June, 1876, shows the number of boys entered since the year 1855, and traces their history during their service as boys, showing the number who invalided, died, or deserted, together with the total number remaining in the Service at the end of each year.

This Return¹ was preceded by a series of very valuable annual Returns,² also furnished by the Admiralty to the House of Commons, giving the numbers of first-class boys, second-class boys, *bonâ fide* seamen, Coast Guard fleet men, borne, rated, entered, or who left the Service in each year, and finally, in July, 1879, the Admiralty gave a Return of the numbers serving on 1st January of that year, giving the ages of the men, and whether single or married. These Returns, together with an annual statistical Return of the engagements of the continuous service men, give ample means of investigating with accuracy the actual working of the continuous service system.

Taking as a basis of analysis the numbers voted in the Estimates, it will be seen that for 1881-82 they provide for a total force of 58,100 men and boys. Averaging the details of the votes, it will be approximately correct to estimate the numbers as follows:—Commissioned Officers, 2,769; subordinate Officers and Cadets, 617; warrant officers, 826; petty officers, seamen, &c., 30,988; boys, 4,700; Coast Guard, 4,000; Marines, 13,000; Troop Ship Service, 1,200—total 58,100.

As the Estimates do not give separately the numbers of stokers, artificers, and domestics, it is useful to take the proportion of these men as deduced from a Return laid before the Commissioners in 1858-59, observing that these proportions are nearly the same as those now existing, with the exception of a slight increase in the establishment for the engine-room, and some modification in the numbers borne of petty officers and leading seamen.

Upon a total number voted of 52,000 there were—Commissioned Officers, 2,857; subordinate and warrant officers, 1,718; petty officers, including artificers of this class and leading stokers, 5,434; leading seamen, 763; able seamen, 6,262; ordinary seamen, 5,913; ordinaries,

¹ Printed by order of the House of Commons, June 23, 1876.

² Extracts from these Returns are given for reference at the end of the Essay; they are too extensive to be given in full.

second class, 1,904; bandsmen, stewards, and cooks, 1,454; boys, first-class, 2,383; boys, second-class, 2,745; supernumerary boys for disposal, 767; supernumerary Officers and men for disposal, 1,754; shipwrights and stokers, 3,260; marines, afloat 8,755, on shore 6,063—total borne, 52,032.

Thus it will be seen that in 1858 the number of petty officers and men who were *bonâ fide* seamen was between 19,000 and 20,000.

In 1875 a statistical Return furnished by the Admiralty to the House of Commons gave 19,283 as the total number of continuous service blue-jackets serving on the 1st October of that year. Retaining these average numbers, and applying them to the votes of the present year, it may be estimated that the actual number of petty officers and seamen who are *bonâ fide* seamen amounts to about 20,000 men. Taking, then, this number as a fair average of our combatant seaman force on active service afloat, and adding to these the contingent of marines also serving afloat, and which numbers this year 6,300 men, it appears that the total combatant¹ force afloat, exclusive of Officers and boys, equals approximately 26,000 men. This force, which is sufficient for the purposes of a peace establishment, must now be estimated, when considered as a combatant force, by the ages and length of service² of the men that compose it.

Upon examination of the Return of the ages of the men and boys of all classes serving in the Navy, on the 1st January, 1879, the following useful data are obtained. The Return includes all seamen, marines, stokers, artificers, domestics, and boys, but excludes Officers. The total number thus serving on that day was 53,050. Of these there were—Under 20, 10,933; 20 to 25, 17,101; 25 to 30, 9,677; 30 to 35, 6,157; 35 to 40, 5,636; over 40, 3,546; total, 53,050. Upon reference to the Returns giving the numbers³ of ordinary seamen rated from boys, we find that the average thus rated in each year is about 2,500; and as all boys are rated at 18, we arrive at the following results, which are approximately correct for any given year:—

Bonâ fide seamen, exclusive of boys,—Age 18, 2,500; 19, 2,325; 20, 2,163; 21, 2,012; total actually serving of and under 21 years of age, 9,000.

The waste of 7 per cent. upon which the above figures are calculated is an average taken upon the loss to the Service after boys are rated, and which has been found to be approximately correct. The waste upon the boys is much greater. Thus, taking an average estimated from a Return⁴ given by the Admiralty in 1876, it may be seen that the annual loss is about 18 per cent. The Return for the year 1874-75, which fairly represents the normal annual loss, is here given:—

¹ The "non-combatants" include artificers, stokers, bandsmen, stewards, and domestics.

² For comparative length of service, see Appendix No. V.

³ These numbers are dependent upon the entries and discharges. The average as given above is taken from the Returns of several years since 1870.

⁴ It is very remarkable in looking at this Return, which is given for a period of twenty years, to observe how the averages of the causes of discharge agree.

Year.	Number of boys entered.	Discharges.							Number of boys remaining each year.
		Purchase.	Invalided.	Died.	Deserted.	Disgraced.	Unfit, Objectionable, &c.	Total.	
1874-5....	3,079	25	208	22	263	2	31	551	6,204

There are circumstances connected with the training of boys by the State which require some notice as bearing upon the system of continuous service. It has been observed that boys trained at an early age, brought up and fed under either the care of the Government or of Local Boards, do not, as a general rule, as they grow towards manhood, compare favourably either in physique or in capacity with those who have been brought up under home influences, or who have had to a great extent to rely upon their own exertions for their maintenance.

Thus a very decided difference is noticeable between the young fishermen who volunteer for our second-class Naval Reserve, and our own ordinary seamen of the same age, the former being much superior to the latter in strength, stature, and self-reliance.

And the same fact is observed upon the examination of the French "mousses" (boys) trained for the Naval Service on board the "Austerlitz" at Brest, when they are compared at similar ages with the men who are taken from the fishermen belonging to the Maritime Inscription. The Returns taken some years ago of the weight and stature of the boys received from Greenwich School, showed that they were inferior in those respects to the average of other boys of the same age.

At the institution in Brest for the education and training of the "Pupilles de la Marine," which is a school analogous to our Greenwich Lower School, this singular comparative inferiority in size is also very marked. The boys trained for the French Navy are taken from a class almost identical with the classes from which ours are taken; and, therefore, it is probable that the causes which create an inferiority in physique on the other side of the Channel, correspond to those at home. In both cases this deficiency of stamina is possibly in a degree due to the stock from which they are taken, but there can be no doubt that it is to the overcrowding of these lads at night through want of sufficient accommodation and air space that this serious defect is chiefly attributable. Under the French system 800 growing lads are thus crowded in one ship, and in our own training ships there exists an exactly similar system.

It is well known that, for purposes of health, growing boys require more air space than adults, and the vitiated air necessarily breathed every night by the thousands of boys who pass through our training

ships must unquestionably have an injurious effect upon their ultimate development into manhood. It is not within the scope of this Essay to dwell further upon the subject of our training system, which gives admirable results as far as is possible with the conditions under which it works.

But there can be no doubt that it would be advantageous to enlarge the space at present assigned for the boys' sleeping quarters. It is also a matter of experience both in the French Navy and in our own that where too many young lads are trained together, they lose to a considerable extent their powers of self-reliance, and being accustomed to work in companionship they trust too little to their own individual exertions. The habits of personal hard work, and of obtaining confidence in their own judgment and general resources, which are natural to that class of men from which our Naval Reserve are recruited, and which in France forms the element of the Maritime Inscription, are thus necessarily absent from the young ordinary seamen trained up from boys by the State, and are only developed later on after some years of active service. This much may be said, that although thus late in developing, nothing can exceed the value of our trained boys when they become our petty officers and seamen gunners.

It is a necessary consequence of the continuous service system, as at present carried out, that the ships in commission should to a certain extent continue the training which was commenced in the training ships in our home ports, and therefore the extreme youth of a large proportion of the complements of these ships cannot be avoided. This, though a matter of unimportance in time of peace, would become a serious element of weakness in the case of sudden hostilities, as our ships' companies would not proportionally, and with regard to the physical strength of their men, be in the same preparation for battle as the crews of the ships that would probably be opposed to them. Take, for instance, an ironclad of the first class of our Navy meeting with a similar vessel under the French flag, both having complements of 600 men. Our ordinaries of the first and second class, and younger able seamen of the ages of 18, 19, 20, and 21, would be opposed by trained men taken from the Maritime Inscription, of the ages of 22, 23, 24, and 25, men who in stature and strength almost equal that splendid force of Naval Reserve men that we have enrolled from our northern coast.¹ The continuous service system when first organized in 1853 was, to a considerable degree, an experiment, and was the first attempt to man our ships-of-war upon a regulated principle. It has proved to have been most successful in many of its results, especially with respect to establishing a very superior class of petty officers, and it also has produced that fine body of trained seamen that now constitute our Coast Guard. It has also entirely put an end to the uncertainty of manning. Ships when commissioned are no longer kept waiting for months for their crews, and the Admiralty have always at their command the number of men that they may require.

These results are certainly very important, but there must always

¹ An investigation of the French Maritime Inscription and Military Sea Conscription will be given in its proper place, upon considering the strength of our Reserves.

exist in the system, as at present worked out, that grave defect of the too great proportion of lads, and also the corresponding defect of a protracted period of time expended for training purposes. As the first result of the system, there are every year placed at the disposal of the Admiralty over 2,000 young lads of eighteen years of age, who have to be distributed in the most expedient manner. Some are sent to complete the complements of ships in commission in various parts of the world; others have a further training in special training ships; others are sent to the reserve ships; and the surplus yet remaining crowd the ships and barracks in our home ports. The difficulty that thus annually presents itself is to absorb into active service this excess of young seamen.

It is of no use to reduce the entry of boys, because these large numbers of youths are ultimately required in the course of their service to fill up the vacancies created by the waste arising from sickness, desertion, and other causes, and also to complete the vacancies in our complements caused by the continuous drain of our older seamen and petty officers into the Coast Guard.

There is also a serious evil connected with this part of the system.

Several hundreds of lads thus thrown together, with a sudden sense of comparative freedom, are naturally subject to great temptation, and many of those who leave the training ships well behaved and full of promise become addicted to injurious habits. It would be difficult to over-estimate the harm that is thus caused. This aspect of the subject, however, will not further be dwelt upon.

As it is the youth of such large bodies of our seamen that is the chief fault of the continuous service system, all propositions for other methods of manning must be based upon a later age of entry. It may be assumed as a principle, that in view of our ships in commission being always kept in preparation for battle, in consequence of the possibility of sudden hostilities, no man who is expected to take his place at a gun and actively to take part in war should be less than twenty years of age.

If such a principle were adopted, it would very greatly and very properly strengthen our ships' companies, but it would be necessary, in case it were decided to retain intact the present continuous service system, to extend the training by means of flying squadrons, distinctly organized for training purposes, in which ordinary seamen would remain until they were of the proper age and strength to be sent upon regular service. The drawback to such a system would be its additional expense.

The establishment of barracks, as now contemplated at all the home ports, would greatly facilitate the execution of this principle.

The following methods may now be proposed as likely to lead to a satisfactory way of obtaining sufficient men, without the above waste of time and expenditure.

Boys are now willing to enter the Navy in such numbers that it is probable that the age for entry could be considerably raised. The entry of novices between the ages of nineteen and twenty-one might also be encouraged.

The results obtained from those men who were trained in the "Illustrious," in the years 1854-59, were very favourable; in fact, it may be assumed that whilst maintaining a modification of the continuous service principle, it would be expedient to combine it with a system that would enable men of a mature age to be entered.

The present pay, together with the prospective advantage of pensions, will, no doubt, when clearly understood, attract a sufficient number of volunteers. The general expense to the State would be less, and the ultimate advantage would be greater. The time required for training purposes would be comparatively short. No better proof of this exists than in observing the rapid manner by which a lad of twenty, taken from the agricultural classes, is, by means of an excellent training system, converted into an efficient marine artilleryman.¹

It is mainly to the recommendations of the Royal Commissioners in 1859 that we are indebted for our existing Naval Reserves. The Commissioners were appointed in the first instance to inquire into the best means of manning the Navy, but they were also directed especially to report as to the manner in which the services of the seamen of the Mercantile Marine, and of the seafaring population generally, could be best made available for the requirements of the Navy.

With respect to the first part of their inquiries, they considered that the continuous service system, introduced through the recommendations of the Admiralty Committee in 1852, would, if fully carried out in the manner contemplated, produce sufficiently beneficial results, and ultimately place the peace establishment of the Navy in a satisfactory condition. They also proposed various improvements with respect to the position, pay, and comfort of the warrant officers and seamen, all of which have been mostly adopted. They then directed their attention to the best methods of obtaining a Reserve, that would enable our peace establishment to be immediately placed on a war footing, and in examining these questions, they extended their inquiry into the Naval Reserves of the Continental Powers, in order to place our own Reserves at a strength commensurate with the forces that might be expected to oppose them.

At the period when the Commissioners had submitted their recommendations, Italy was not an European Power, and could not then be taken into consideration when estimating the numbers required for our Naval Reserves. But immediately that Sardinia, Italy, and Sicily became united as one kingdom, every effort was made by the Italians to establish their Navy upon a strong footing. Their remarkably extensive seaboard, and the known excellence of their sailors, gave great facilities for this purpose. The determination of Italy to become a Naval Power was chiefly shown in the year 1871, after the conclusion of the Franco-German War, and when European nations generally

¹ Some further observations respecting the subject of manning, and what would probably prove to be good methods of attracting a satisfactory class of men to volunteer for a term of service in the Navy, will be given after the subject of the Royal Naval Reserves has been considered.

were made aware of the importance of keeping their forces in a state of immediate preparation for hostilities. At this time the Italian Government instituted that most stringent series of enactments, called the "*Legge Fondamentale della Leva Maritima*," which are most remarkable, when it is considered that they were enforcing an extensive compulsory service upon a nation just made sensible of its freedom.

The whole of the seaboard population were placed under a system of maritime inscription, and were liable to be called upon active service according to the requirements of the Government. The various regulations that have from time to time been made for the practical application of the laws, bear a close analogy with those existing in France, and need not here be noticed, except to observe that as the Italian Navy is not now sufficiently large to train great numbers of men, the inscription is divided into two classes, those who are called into immediate service, and those who are said to be on unlimited leave.

In 1880, the Italian Maritime Inscription comprised 210,267 men,¹ including fishermen, boatmen, merchant seamen, artificers, stokers, and shipwrights. Looking at the great elements that exist on the coast of Italy for the development of a strong maritime Power, there can be no doubt that when the state of her finances permits the construction of a large fleet, she will, owing to her great resources of seamen, necessarily become a most powerful naval nation.

Germany also, in 1871, promulgated laws which constituted her Navy upon a basis of compulsory service which can be readily developed in proportion to the naval requirements of that Empire.

It is, however, to the system of manning, as pursued in France, that the greatest importance must be attached, as contrasted with the system adopted in Great Britain.

Men composing the fleets of the French Navy are derived from two sources, viz., a maritime inscription, and a military conscription. The former generally supplies about two-thirds of the ships' complements, and the latter one-third. The quota furnished by the military conscription consists of the men who draw the lowest numbers at the ballot for military service, and thus when the young men who have attained the age required by law present themselves for the ballot in the chief towns of the departments, those who draw out of the urn the lowest numbers are destined by the Minister at War for service in the Navy, in accordance with the requisitions that may have been made by the Admiralty, the higher numbers having the choice of electing to serve in the Army. The men, when so taken for the Navy, are termed, when on service, seamen taken from the "*Recrutement*."

These men, upon arriving at the age for being called out on active service, proceed to their nearest military ports, and are received into the naval barracks. After remaining the time necessary for receiving their clothing, and getting a certain acquaintance with naval routine, they are sent away to the school ships of instruction to go through a year of training before final embarkation on board ships-of-war.

¹ Of this number 148,390 are composed of men specially following or connected with seafaring pursuits; the remainder are workmen, carpenters, &c.

As a general rule, a considerable part of the men of the "Recrutement" are sent to Lorient, to be there trained in a special course of musketry, in order to form what are termed "*les compagnies de débarquement*." They represent to a certain extent the non-seamen element on board the French ships, and thus are similar in many respects to our marines. Their period of service is for five years, the same as that for the Army; and at the end of that time, if they do not re-engage, or are not considered desirable to be re-engaged, they quit the active service of the Navy and pass into the Reserve.

Whilst in the Reserve they have to present themselves for twenty-eight days' training in the home ports once in every two years. These men ultimately pass into the Reserve of what is termed the "Territorial Army."

The men of the "Recrutement" are generally intelligent and apt, but cannot be considered as equal to the seamen of the inscription. They are mostly employed in such positions as do not require seaman-like knowledge. French Officers of experience, however, think highly of them as a component part of the complement. It is found that they are very steady at the guns, are readily trained, and are very amenable to discipline. It is certainly instructive to see how these men, when they join the barracks, willingly and even cheerfully fall in with the new circumstances in which they find themselves, and are ready to submit to whatever special training it is considered they are best fitted for.

There can be no doubt that the law of 27th July, 1872, establishing the principle that every Frenchman is bound to perform military service, and suppressing all previous systems of obtaining substitutes, has had very good results.

The system of obtaining a proportion of men from the military conscription is of great use to the French Admiralty, as they have it in their power to take as many or as few men as the exigencies of the Service may require, and it also relieves the strain on the resources available from the Maritime Inscription, and thus the compulsory service of merchant seamen and fishermen can be occasionally modified when desirable.

It is thus evident that provided sufficient time is given for training the recruits, the French Admiralty have by means of the "Recrutement," great powers at their disposal for manning their ships in the case of a prolonged war, independently of the resources available through the population of the seaboard.

The Maritime Inscription has to a certain extent changed its character since the law of universal military service was passed in 1872. Previous to that time a sense of injustice was felt in consequence of the existence of regulations which pressed more heavily upon the population of the seaboard than upon the population of the interior. But now the law which demands a certain number of years of naval service from all who follow the profession of the sea is no longer felt to be exceptionally severe, and consequently this service is much more cheerfully rendered.

The institution of the compulsory service of all seafaring classes

has existed for so long a period, practically since the year 1784, that it has naturally become recognized as one of the duties that, as a matter of course, falls to the lot of all boys who decide to follow a seafaring life, and thus may be said to have become a national custom. This compulsory service in the French Navy is not, however, necessarily imposed on the people merely because they happen to be dwelling on the sea-coasts, for there is this choice open, if a man decides not to follow the profession of the sea, his name is not then placed on the list of the inscription, but in that case he has to perform his five years' active service in the Army. In the contrary case he presents himself before the Syndic, and is inscribed as liable for service on board the ships of the State.

It is not of importance to notice the minor rules that govern peculiar cases, and introduce slight modifications of the system. The latest law upon the subject, viz., that of 25th October, 1795, is practically unchanged, and this distinctly lays down the simple rules that all sailors of whatever grade, and of all descriptions, navigating either in the ships of the Navy, or in vessels of commerce, and all who are employed in the coast navigation, in the sea-fisheries, or in the fisheries of the rivers up to that point where the tide reaches, and those employed in boats within similar limits, are comprised in the Maritime Inscription.

In 1879 the total numbers on the list of the inscription were 162,830; and in 1878, 161,192. 78,000 of the men inscribed in 1879 were classed as being between the ages of eighteen and forty, and form what is termed the "Levée Permanente."¹ The remainder are composed of about 50,000 "Inscrits Provisoires," who chiefly consist of youths who have not completed the requisite age or term of service in fishing boats and merchant ships to be eligible for the Navy, and there are also about 40,000 men unemployed, the majority of whom cannot be deemed available for active service.

Of late years, what used to be the chief difficulty in the French Service, with regard to the practical working of their system of manning, has been much lessened, and they now get a very good class of men to re-engage, and thus they are able to have what may be considered an almost permanent establishment of petty officers and good seamen, and thus the fault arising from the constant passing in and out of the younger seamen is not so much felt.

Much of the advantage thus gained by the French Naval Service is due to the scale of higher pay given to re-engaged men, and also to a liberal system of pensions, not only granted to petty officers and seamen after twenty-five years' service, but continued to their widows and orphans.

The value of a system of compulsory service, considered with respect to a reserve in time of war, principally depends upon the numbers that can be trained during peace. At present an average of nearly 4,000 men of the Maritime Inscription, and 1,500 men from the military

¹ The numbers of the Levée Permanente represent the real strength of the Maritime Inscription.

conscription, are annually trained in the home ports and embarked for sea service.¹

In 1879 there were about 6,000 men training either in the training ships at Brest, in the gunnery ships at Toulon, in the musketry class at Lorient, or in the Flying Squadron, and the numbers actually serving in ships-of-war in commission were slightly in excess of 18,000 men. To these must be added nearly 3,000 trained men, who have completed portions of their sea service, who are temporarily in naval barracks, engaged in dockyard duties, or upon service in ships on trial. Thus it may be estimated that at present the peace establishment of France comprises about 21,000 combatants immediately available in case of hostilities, and 6,000 men going through annual training, of whom one-half may be said to be sufficiently advanced to embark on an emergency.

In case of war she would have in addition, available from her "Levée Permanente," a force which, excluding the numbers actually on service in the fleet, consists of about 54,000 men, and to these must be added the naval reservists belonging to the military conscription. All these would have been trained in early life to the discipline, drills, and habits of a man-of-war, and would rapidly conform themselves to the circumstances and requirements of modern warfare.

It must also not be overlooked that the "Infanterie de Marine" can within certain limits be utilized for naval purposes. In 1879-80 this force comprised 775 Officers and 16,889 men, of whom 8,000 were in garrison in the colonies, and the remainder were quartered at Toulon, Rochfort, Brest, and Cherbourg. To these have to be added the "Artillerie de Marine," comprising 270 Officers and 4,287 men, of whom 1,087 were also in garrison in the colonies, and 3,200 attached to the dépôt at Lorient.

In consequence of the vote for the garrisons of the colonies forming part of the Naval Estimates, these troops are placed under the orders of the French Admiralty, but they are never embarked in ships-of-war, and have no more acquaintance with the drills and discipline of the Navy than have the soldiers who are embarked in our troop-ships for service in India. But there are certain circumstances which attach them in other respects to the naval Service. Their barracks are at the naval ports, generally adjacent to the dockyard, and when quartered there they are under the command of the "Préfet Maritime" (Port Admiral), and in case of emergency the "Infanterie" and "Artillerie de Marine" might be employed in whatever manner the Admiralty thought expedient.

The best sailors that France obtains for her fleets are taken from the northern and north-western coasts. Nothing can exceed the value, as efficient and able-bodied seamen, of the men engaged in the deep sea fisheries of Newfoundland and the North Sea. They may well be compared in general physique and stature with that fine class of men who are occupied in our own deep sea fisheries, many of whom are

¹ In 1878 it was estimated that the number of re-engaged men and petty officers belonging to the Maritime Inscription was about 8,000. The numbers given on active service in the Fleet include these under training.

enrolled in our Second Class Reserve. It is impossible when seeing these fine young seamen arrive at the barracks, willingly prepared to go through their training and perform their forty-two months¹ service in their Navy, not to realize how unfortunate it is that Great Britain, with her unparalleled extent of coast, and her numbers of seafaring people, cannot command the services of her subjects, and avail herself of the great maritime strength thus placed by nature at her disposition. If it was possible to adopt a system of compulsory service, such as exists on the Continent, the supremacy of Great Britain on the seas could never be questioned.

It would not be much to require from all her seafaring people to give their time between the ages of twenty-one and twenty-four to the service of the State, and how great would be the strength thus given to the nation! Not only would our fleets be manned by practically an unlimited number of trained, able-bodied men, but our coasts would be secure from invasion, because they would be guarded by a population trained to war, and accustomed to arms. Every seaport and every fishing village would then in its degree be prepared to resist an enemy. But as such a desirable state of things cannot be considered as practicable, it becomes necessary to use every endeavour to organize and apply our national strength by means of voluntary service; that is, service so well paid or offering such advantages as will attract men to serve on board our ships-of-war.

But no system, except such as would involve expenses greater than any Government could contemplate, can ever give us the resources that are immediately and willingly placed at the command of other nations.

Before quitting this part of the subject, it is desirable that it should be recognized that a great mercantile Power is not necessarily a great Naval Power, and there is no relation whatever in these days between the numbers of the crews of our merchant shipping, and the numbers available for the requirements of our Navy in war. It would be a very grave error to suppose that we could rely as a nation upon the resources which a large mercantile marine might be expected to develop. The only strength available from that source is what may be derived from the numbers, comparatively few, that are willing and sufficiently efficient to form part of our reserves; but these, however well trained in the drill ships and shore batteries, cannot be considered equal to men who have passed three or four years' active service on board ships-of-war.

Having thus briefly investigated the resources of other naval Powers, as at present developed under this system of compulsory service, it will be needful to examine into the resources that are at the command of Great Britain, as established by methods of voluntary engagements.

These consist of the Coast Guard, the Marines not employed afloat,

¹ The prescribed period of service is five years, but this is seldom required; thus from 1868 to 1874 the average time served was thirty-six months. From 1874 to 1881 the average has been forty-two months. Upon this subject see "Cours d'Administration," by M. Fournier.

the Pensioners, and the Royal Naval Reserve, and also the special unpaid corps of Artillery Volunteers.

The establishment of that part of the Reserve Force which was known as the Naval Coast Volunteers was the result of the recommendations of the Committee of 1852, and the principles which governed their organization were, in a considerable degree, similar to those upon which were based the regulations for the enrolment of the Sea Fencibles in 1798. Upon referring to the Return given, pursuant to the order of the House of Commons, in 1858, for a copy of the authority under which the Sea Fencibles were organized and their duties defined, it appears that the numbers of men actually enrolled in 1810 were distributed as follows:—East coast of England, 3,042; south coast of England, 4,551; west coast of England, 3,466; Scotland, 584; Ireland, 11,812—total 23,455.

These men were to be raised, it is observed in the Order of Council giving the necessary powers to the Admiralty, for the purpose of assisting in the defence of the Kingdom against invasion, and it does not appear that there was ever any intention of employing them upon active service at sea.

In accordance with the recommendations of the Committee an Act was passed in 1853, giving power to the Admiralty to raise a number of men, not exceeding 10,000, who were to be called Royal Naval Coast Volunteers. These men were to receive suitable pay and allowances, and to be trained and exercised for twenty-eight days in each year. They were, if required, in case of war to be called into service afloat, but their general usefulness was much impaired by that part of the Act which directed that they were not liable to be sent beyond 100 leagues from the shore of the United Kingdom. At first many men of a very inferior class joined this Reserve, but these were gradually eliminated, and in the evidence given before the Commissioners in 1859, it appears that there were then 6,869 men of a fair description enrolled. These came from the following districts:—¹ East coast (Cromer to Berwick), 599; Harwich district, 509; New-haven district, 471; Weymouth district, 468; Falmouth district, 735; Milford district, 1,212; Liverpool district, 506; Leith district, 1,657; Clyde district, 288; Queenstown district, 424; Kingstown district, 0—total 6,869. The majority of these were fishermen and boatmen.

It will be noticed that the Leith district, which includes the east coast of Scotland, obtained the largest number of volunteers. The Captain of that district was of opinion that these would be valuable as gunners but not as seamen, and stated, in reply to a question respecting their size, "that they were a remarkably fine race of men."

The general character of the evidence regarding the Coast Volunteers was, however, considered not favourable with respect to their usefulness for manning a fleet in an emergency, and the entry of this class of reserve has been stopped.

It is to the investigation made by the Commissioners in 1858 into the resources of our Mercantile Marine that we are indebted for the

¹ Evidence given by Commodore Charles Eden, then commanding the Coast Guard.

establishment of the Royal Naval Reserve. The regulations upon which this Reserve was formed were chiefly framed in accordance with the suggestions of the shipping masters at the principal mercantile ports, and who were the witnesses most conversant with the character of merchant seamen. It is unquestionable that the advantages offered to these men to induce them to volunteer were the most attractive, and combine the best method of obtaining an efficient force with the least public expenditure. The conditions of entry as originally established and modified by later regulations can thus be summarized. The candidates should be British subjects, and free from physical defects. The age on first enrolment is not to exceed thirty years, and the minimum standard of height is fixed at five feet four inches, except when special circumstances may render it desirable to enter smaller men.

There is no restriction with respect to the seafaring employment of a Reserve man, except that if he wishes to serve in a merchant vessel for a voyage exceeding six months, he must obtain leave from a Registrar of Reserve. He is required to have had a certain amount of sea service, and if not an apprentice, must have completed one year's service as an able seaman.

After entry, he is required to perform twenty-eight days' drill in each year, which, however, to suit his convenience, may be performed in broken periods of not less than one week. When called out for service in the Navy, he is treated in all respects as our regular continuous service men, and is given equal pay and allowances. He is then liable to serve for five years, at the expiration of which service he can demand his final discharge.

Each Naval Reserve man is entitled to an annual retainer of 6*l.*, paid in quarterly instalments, and when on drill he is paid at the same rate as a naval able seaman, and receives liberal allowances for food and lodging. A man who has belonged to the Naval Reserve for twenty years becomes entitled to a pension at sixty years of age of 12*l.* a year. There are also other advantages given to Reserve men if they have served in the Royal Navy in time of war.

The Commissioners based their recommendations upon the belief that there existed an available number of merchant seamen from whom this force could be selected, of not less than 100,000 men, and it is interesting, with the experience we now possess of the comparative inability of our Mercantile Marine to furnish able-bodied men for the Navy, to see what was the state of opinion upon the subject in 1858-59. "That the force," observed the Commissioners in submitting their plan for the Reserve, "may be ready in case of emergency, it must be selected from men who will never be long absent from the ports from which they hail. It appears, from the Returns that have been furnished to us, that the coasting trade of this country employs 63,000 men, including masters. The Returns do not comprise watermen and others who might be made available for the purpose. If we add the Baltic and Mediterranean trades and the voyages to the North American and other ports, including the seamen employed by the large steam packet companies, we shall have not less than 100,000 men,

who are never absent for any length of time from the ports of this country. We propose that not less than 20,000 such men, as in point of age, ability, character, and permanent connection with their respective posts may appear most suitable for the purpose, shall be selected from this number."

It has been found that instead of 100,000 men there are certainly not 30,000 available, and that instead of selecting 20,000, we can only at present rely upon obtaining from all sources an average force of 12,000 men. Until 1870, the Royal Naval Reserve was exclusively composed of men who had served in the Mercantile Marine, but in that year, as a consequence of the Report made by a Committee upon the practical working of the regulations, it was decided to enter a limited number of men called a Second Class Reserve, and the following numbers were then established. First Class to consist of 15,500, Second Class, 500 men; the latter being temporarily considered as experimental. These Second Class men were soon seen to form a most valuable part of the force, and their numbers gradually increased until now we have approximately these proportions—First Class, 12,000; Second Class, 5,000.

The principal qualifications, as at present established for enrolment in this most important branch of the Reserve, are briefly as follows:—The candidate must have followed a seafaring life, either in foreign-going, coasting, fishing, or other vessels. His age on entry is not to be over thirty or under nineteen. He must be a British subject, and be free from physical defect, and eligible in respect of health and character. He is required to drill twenty-eight days in each year, and, as in the case of the First Class Reserve man, he can divide the period into attendances of not less than one week at a time. The liability to serve is the same as that of the First Class. The advantages offered are these. He is given every year a retainer of 2*l.* 10*s.*, paid in quarterly instalments, and a suit of uniform clothing. He is not entitled as a Second Class man to a pension in old age, but if he becomes eligible for promotion to the First Class, half of his Second Class time counts. When called out on service he receives the same pay and allowances as an able seaman, and is entitled to similar proportions of prize money and other advantages. When on drill, the Second Class men are paid as non-continuous service ordinary seamen, and also receive subsistence and lodging money.

The above regulations are found, by experience to work well, and give sufficient inducements to encourage men to volunteer. The advantages and disadvantages are exceedingly well balanced. Any reduction in the amount of retainer, or any extension of the periods of drill, would certainly cause a considerable reduction in the number of candidates. The establishment of the Naval Reserve is undoubtedly the most successful method of placing a force of seafaring men at the command of the Government in time of war that has yet been instituted. The First Class men are the picked men of the Merchant Service, and those of the Second Class are equally the best of the men employed in the fisheries, and an examination of their capacities and numbers is a useful measure of the means at our disposal for developing the Reserve systems. The Parliamentary vote for some years

was for a force of 20,000 men of the First Class, but as this number has never been obtained, the vote for this year, 1881-82, is taken for 18,000, but as it has been found by experience that an average of 12,000 men is all that is furnished by the Mercantile Marine, the remainder of the men that are obtainable are taken from the fishing population, and supply a general average of over 5,000 men. The exact number of both classes at present enrolled is 17,528.

Upon looking at the Returns of the crews of our merchant ships, it seems almost inexplicable how such a vast floating population gives such remarkably unsatisfactory results. It may be assumed that the total numbers of seamen that could be considered fit for employment in our Navy must be estimated at less than 30,000 men, and after all practical deductions on account of age, physique, and character, we arrive at the extraordinary conclusion that a Mercantile Marine, whose force actually employed in merchant shipping has averaged during the last forty years above 200,000 men, cannot be considered as capable of supplying an efficient Reserve of 20,000 men. As a matter of fact, it only supplies 12,000, but these numbers might probably be extended to 14,000 or 15,000, if greater facilities were given with respect to attendances at drill, by the establishment of additional drill ships or batteries.

Estimates have been made from time to time, based upon the Returns of the Board of Trade, respecting the absolute seaman strength of our Mercantile Marine. An examination of these estimates would involve a demand upon space greater than can be here given, and therefore it will be sufficient to observe that all of these give conclusions unfavourable as regards the number of able-bodied seamen serving in our merchant ships. Perhaps the most useful calculations available are those furnished for the year 1873, by the Liverpool Committee. It appears from their Report, that in 1873, the number of men serving in vessels belonging to the United Kingdom was 202,239, and of these 19,840 were foreigners. Of the remaining 182,399 it was calculated by the Secretary of the Committee that not more than 20,000 were able-bodied seamen. In 1875, the Board of Trade Return gave the number of men as 207,446. From these the Registrar-General considered that deductions to be made approximately for a non-seaman class of stokers, servants, and others of about 121,000 men, and of foreigners 16,000; thus leaving a number of masters, mates, able and ordinary seamen equal to about 70,000. Of these it was estimated that so large a proportion was composed of apprentices, lads, ordinaries and so-called A.B.'s, that the number of efficient able seamen was only estimated at 28,000.

In 1877, the Board of Trade Return gave 72,800 as the number of able seamen who were British subjects, but no calculation has been made with respect to their efficiency.

There is much difficulty in deducing useful data from the Returns¹ of our Mercantile Marine, as there are no means of ascertaining with sufficient accuracy the proportions of men that are really efficient

¹ A most useful and exhaustive Return was printed by Order of the House of Commons, March 10, 1881, entitled "Tables showing the Progress of British Merchant Shipping."

seamen. The calculations upon this subject widely differ, and depend chiefly upon the judgment of the person who makes them, as to what does or does not constitute an able-bodied seaman. But taking a general estimate of the various Returns that are available, it results that the number of our merchant seamen serving in ships belonging to the United Kingdom, who are British subjects, and upon whom, as regards physique, ability, and character, we can rely as a base for the purpose of manning our fleet or supplying our Reserve, cannot be estimated as exceeding 30,000, or to put the matter in a broader point of view, the value of the crews of the Mercantile Marine, considered as a source of strength to our Navy, equals in an emergency only about 30,000 seamen. The scheme for the Reserve, as proposed by the Commissioners in 1859, included a measure which was by them considered of the greatest importance, viz., the establishment of school ships in the chief commercial ports. Boys were to be trained chiefly with the object of fitting them for the Merchant Service, and instruction was also to be given in gunnery, to make the lads ultimately useful for service in the Navy, and much stress was laid upon the probability that the future maintenance of the Reserve would chiefly depend upon these trained boys, and it was calculated that about 2,400 boys would be sent every year from these school ships into the Merchant Service. These expectations, however, have not been fulfilled.

An examination of the Return of the training vessels that have been established since 1860, and which are, to a certain extent, under the superintendence of the Admiralty and have gunnery instructors attached to them, gives the following results:—

Ship.	Where stationed.	Established.	Class of boys.	Average numbers on board.	Numbers in 1879	
					Sent to sea.	Sent to the Navy.
"Mars"	Dundee	1870	Destitute and orphans.	300	58	3
"Cumberland"	Helensburgh, N.B.	1870	Street Arabs ..	350	72	4
"Wellesley"	Newcastle	1868	Destitute and others.	300	54	7
"Southampton" ...	Hull	1868	Ditto	250	24	
"Indefatigable" ...	Liverpool	1864	Poor	250	61	4
"Formidable"	Bristol	1869	Street Arabs, who have not been convicted of crime.	250	83	9
"Exmouth" (late "Goliath").	Grays, River Thames, Essex.	1870	Pauper class chiefly.	550	105	4
"Clio"	Mennai Straits	1877	Homeless and destitute.	260		
"Gibraltar"	Belfast	1872	Ditto	200	13	1

The numbers sent to sea in 1879 are in excess of the average, but taking that year for an example, it will be seen that 502 boys were sent to sea from the school ships in connection with the Admiralty Regulations, of whom 470 went into the Merchant Service.

The total numbers actually on board under training were 2,768. Taking, then, 470 as an average of the number of lads who, trained as the Commissioners originally proposed, elect to go into the Merchant Service, and making allowance for waste from various causes, it must be admitted that looked upon as feeders to the Navy and Naval Reserve, through the Mercantile Marine, these school ships are not of much importance, but they are undoubtedly invaluable as regards their usefulness in educating and training homeless and destitute children.¹

In estimating the combatant value of our First Class Reserve, a Return furnished by the Registrar-General in October, 1876, is of great value, and as the numbers and classes of volunteers are within the last five years very similar, this Return may be taken as approximately applying also to the present time. There were then, out of a total number of 11,990 first class men, 75 competent masters, 656 competent mates, and 4,363 holding petty officers' ratings, or altogether 5,094 Reserve men of a most intelligent and capable class. The able seamen are also the picked men of the Merchant Service. The second class men are chiefly obtained from fishermen, especially from those occupied in the North Sea and Scotch Fisheries. These are also a strong and intelligent class, very zealous and willing at their drills, and quick in obtaining a knowledge of their gun and rifle exercises.

Although it may be considered that our whole force of First and Second Class Reserves is generally efficient in physique and capacity, it must be conceded that those who belong north of the Tweed are especially valuable.

It would be difficult to bring together a finer body of seamen than the 1,200 Reserve men who belong to the Shetland Islands, and who drill at Lerwick. Trained as lads in the whaling and seal fisheries of the north, and accustomed to duties which demand strength, intelligence, and courage, they become very capable sailors, perhaps amongst the best that Great Britain produces. They are of exceptionally great stature, their average height being five feet eight inches. They are steady, sober, and well behaved, obedient to their instructors, attentive to their drills, and evince a high degree of intelligence and efficiency. As marksmen they are unusually good, and make excellent practice in firing at a target, both from the great guns and their rifles. At Stornoway, in the Hebrides, there is also a valuable Naval Reserve, equal in numbers to those drilled at Lerwick, but differing in the respect that they chiefly belong to the Second Class. These are also powerful young men, and average in height fully five feet seven inches. Here, as in the Shetlands, the men have a remark-

¹ From the boys sent to sea from the ships that have accepted the terms of the Admiralty Circular of 1875 is being formed a Third Class Reserve; of these there were actually enrolled in 1879 seventy-six.

able *esprit de corps*, and exhibit the same great interest in their drills, and the same great desire to attain a high standard of efficiency. The drill ships at Aberdeen and Dundee also receive a good class of men, in a large degree composed of the crews of our whaling ships. The physical appearance and general intelligence of these men are very satisfactory, and what is especially remarkable, remembering that their lives are chiefly spent in merchant ships and fishing vessels, is the steadiness and correctness with which they perform their battalion drill, marching and counter-marching with great precision and confidence. Their knowledge with respect to the management of their rifles is also considerable. Indeed, it may be said that the men who constitute at present our Reserve in Scotland are men that would be found to be very useful and reliable as a contingent force for our Navy in time of war. The Reserves drilled in England are mostly taken from a different class of seamen, and as a rule have not the robust physical strength of their brethren in the north, but are, almost without exception, steady, reliable, and intelligent men; some indeed are remarkably so.

Nothing could be more valuable than are the majority of the Reserves trained in the Port of London, of whom many are or have been serving as mates in merchant vessels, many are petty officers, and others are good capable seamen employed in various places of trust, in connection with the shipping and the docks.

The question has occasionally been raised whether, in the event of a national emergency, our Royal Naval Reserves will be found willing or desirous to perform their engagements, and present themselves for active employment in war. Until the time arrives for putting this question on trial, it cannot be answered, but this much is evident, that it is not conceivable that any number of men would thus expose themselves to public scorn and ignominy, much less can it be imagined that such a class as we have in the Reserve, men of steady and sober habits, intelligent, self-respecting, and manly, could for a moment fail to come forward; on the contrary, it may be considered as a certainty that our Reserves, as at present constituted, will always form a force upon whose willing services the country can rely, whenever they are called out upon active service by proclamation from the Crown.

It is desirable that our Reserves should be increased to a number not less than was originally proposed. This must be done chiefly by encouraging the entry of men of the Second Class. Judging from the almost stationary character of the First Class, it may be considered that the Reserve from the Mercantile Marine has nearly reached its practicable limits.

It could be slightly increased by the establishment of drill batteries near any important commercial port, which has not drill ships within a convenient distance, and then the First Class might ultimately be raised to 14,000 or 15,000 men.

But it is to the Second Class, the class taken from our fishermen, that we must look for any augmentation to our strength, and by establishing additional batteries, near the chief fishery districts, especially on the coasts of Scotland, we could easily raise our Second

Class Reserve to 8,000 men, a force which would be probably found sufficient for all practical purposes, for the larger the numbers on drill, the less training does each individual man obtain, and thus the general average of efficiency becomes lowered.

In connection with the Standing Reserves, the Commissioners drew attention to a system of short service pensions, established in consequence of the suggestions of the Committee in 1852. The object of the Committee was to increase the number of seamen available for the Navy, irrespective of what might be required for the peace establishment, and to obtain these it was proposed to give our seamen pensions after ten or fifteen years' service.

It has been, however, found that any short service pension system is incompatible with the continuous service system, which is essentially based upon the principle that men should continue to serve. Indeed, it is of the greatest necessity in regard to its development and proper working that men should be encouraged to remain and re-engage, and thus any advantage given to men who leave is highly injurious. The chief difficulty even as it works now is to maintain a number of petty officers sufficient to supply the wants of our fleet.

The real value of our trained men can hardly be said to be felt, before they reach the age of five-and-twenty, and it is between that age and the age of retirement on a pension after twenty years' service, that our seamen give an adequate return for the expense and trouble that the State has devoted to their training.

In the recapitulation of their recommendations, the Royal Commissioners proposed that, in addition to the Royal Naval Reserve of 20,000 men, the Coast Volunteers should be maintained at 10,000, thus constituting a force of 30,000 men raised from our mercantile and coast resources. They also proposed that there should be 8,000 short service pensioners, 6,000 Marines, not employed afloat, 4,000 available men for reliefs always maintained in the home ports, and 12,000 Coast Guard. It was further proposed to increase the Reserve of Marines by 5,000 men, therefore if the scheme of the Commissioners could have been carried out, the Reserves would have consisted of 65,000 men. But instead of a First Class Reserve of 20,000 men, there are only 12,000; instead of 12,000 Coast Guard, there are only 4,000; the short service pension system has been discontinued, as it was not found practicable; the Coast Volunteers have been disbanded, and the Marines have not been increased.

It now becomes necessary, in accordance with the object of the Essay, to make an investigation into the best methods of providing, at the present time and under existing circumstances, an efficient force of Officers and men for the Navy, including the Reserves.

In the first place, with regard to the training of our Officers, it must be admitted at the outset that our naval history is but of little use in considering this subject.

Naval architecture has undergone a complete revolution, and modern ships require very different management and different qualities in those that have to control their movements. A competent knowledge

is now required of such subjects as steam, electricity, and mechanics. The later development of gunnery, together with the application of electrical and chemical power to the management of torpedoes, demand a special education. The conditions which were so useful in developing the capacities of the great Officers who commanded our fleets in past wars have now but little value with respect to the formation of the abilities of our Officers for the future.

Perhaps there are only two qualities remaining necessary and common to both. The first is seamanlike resource, which may be defined as a capacity for handling ships of whatever types under all circumstances of wind and weather. The second great quality is that of ability to command, which may perhaps be defined as the power to understand the character, and rightly direct the various capacities of the men who compose the ships' companies. Looking back at the old days of sailing ships, it is to be noticed that these qualities were those that were chiefly and almost exclusively required, and our Admirals and Captains were Officers who developed their abilities by their own unaided study in later life, and were entirely without State education. The letters and despatches of Lord St. Vincent, Lord Nelson, Lord Collingwood, and of many other distinguished sea Officers, remain as proofs of the high cultivation that is attainable without any system of education beyond the slight preliminary teaching received as boys before going to sea. But such exceptional instances cannot be permitted to be considered as guides for any general rule. It must be observed that the sea training and circumstances which produced these Officers no longer exist. Therefore, all the arguments respecting the expediency of entering midshipmen at an early age, which have been based upon the results of such early habits of acquaintance with the management of sailing vessels, no longer apply.

The history of the training of our young Officers has been for the last fifty years a series of endeavours to fit in the new requirements of the Service with the traditions of the past. To a great extent we have been building upon old foundations, and the results have not been satisfactory. Various schemes have been propounded. Committees have been appointed to consider the training system as pursued in the "Britannia," and to examine the question of the higher education of naval Officers at a later age. But owing to the hampering conditions of the Regulations for entry, and service afloat, no really satisfactory results have been obtained. These Regulations for entry, and the subsequent methods of educating the cadets in the "Britannia," are so well known that they need not here be further noticed, and it is sufficient to observe that under the conditions as established it is not probable that the training could be improved. It is after the boys leave the "Britannia" that the defects of the present system become apparent. They join their ships full of hope, zeal, and promise, and from that moment it may be said that they begin to cease their progress. They are young Officers, and perform young Officers' duties, yet at the same time they are schoolboys, and they have to try to combine essentially opposed elements of work. As must be natural with lads placed under these conditions, their minds are really

interested in the routine of the ship. They think of their boats, their coming or past watch on deck, of the men of their division and their clothing list, of the approaching exercise aloft, and the comparative smartness at mast and sail drill of the ships of the squadron. When in harbour their minds are also distracted by that constant movement always more or less existing when the duties of a great fleet have to be carried on. As compared with these duties, the studies under the Naval Instructor must inevitably be monotonous and dispiriting. Habits of mental indolence are thus frequently contracted, and as a consequence it is found that when, as Acting Sub-Lieutenants, these young Officers present themselves at the Naval College to prepare for their final examinations, they have not on an average sensibly advanced beyond the knowledge that they had acquired in the "Britannia." In fact, the value of the whole educational work performed under the Naval Instructor comes to this:—that the Acting Sub-Lieutenants at nineteen are equal to what they were as "Britannia" boys at fifteen, and thus the intellectual advancement during that most valuable interval, between the ages of fifteen and nineteen, has comparatively ceased, and that period may be considered as one of mental inactivity. At the same time it cannot be said that the years thus passed on board a ship are essentially valuable as regards seamanlike training. Practically a midshipman serving in an ironclad has but few opportunities of learning the work of a sailor, certainly not so many as he would have if methodically taught a seaman's duties in a sailing training ship.

With respect to the value of the schooling on board, it is useful to the negative extent that it prevents a boy from absolutely falling below the standard of mathematical knowledge reached in the "Britannia." But this is a very inadequate result when it is considered that it is obtained by methods which go far to injure his ultimate officer-like capacity. What can be more ruinous to lads than going over and over again work which they were supposed to know when they left the "Britannia," and in the end, when nineteen or twenty years of age, they have to recapitulate at the college what they learnt when they were fifteen? The Director of Naval Studies in his evidence before a Committee as to the difference of the papers set in the "Britannia" to cadets, and those set to the same Officers on joining the College as Acting Sub-Lieutenants, stated that the Algebra paper was virtually the same, the Geometry was the same, and the practical part of Trigonometry was also the same, and so on with respect to several other subjects. It must also be evident how inadequate are the means of education on board a ship for the acquirement of languages, or for those wider studies which help to constitute a cultivated Officer.

In fact, the whole character of naval education is defective in principle, and consequently defective in its results. It is, however, universally acknowledged that there are many Officers who, trained under the present system or under that system of education as carried out under a Naval Instructor before the establishment of the "Britannia," have become Officers of marked culture and capability,

but this only proves that there are always midshipmen sufficiently energetic and ambitious to overcome all the difficulties and disadvantages of their early training.

Thus, it is evident that the same qualities which in despite of absolutely no instruction whatever produced our great Admirals, still largely exist in our Navy.

But although many capable and distinguished Officers have been developed through the sea training existing when there was no education given by the State, and also when trained by such methods as have been adopted since the introduction of Naval Instructors, these must be considered as exceptions, and bear but a small proportion to the great number that have been baffled in their career through the want of an early well-directed and methodical training.

Various schemes have been brought forward for the better educational training of midshipmen. Amongst others it has been suggested to do away altogether with Naval Instructors on board ships, and permit the energies of the midshipmen to be exclusively directed to the mastering of their professional duties. But it must be remembered that as the ironclad Navy is now constituted, a midshipman at an early age—too early to be placed in positions of trust and responsibility—gains but little advantage by such a scheme. Our ironclad ships are the greater part of their time in harbour, and for the short periods they are at sea, they are kept under steam. The experience that is acquired by our Lieutenants in manoeuvring cannot be equally acquired by our midshipmen, for as a rule they are too young to grasp intelligently the principles of naval tactics. Thus a midshipman would gain but little in professional knowledge, and through having no Naval Instructor, he would to a great extent lose the mathematical proficiency he had attained in the "Britannia," and consequently he would present himself at the College as Acting Sub-Lieutenant still more irretrievably hindered by a misdirected educational system than is the case at present. The late Commodore Goodenough, whose experience of the training of midshipmen was very extensive, an experience gained during long service in flag-ships, especially when in command of the "Victoria" and the "Minotaur," was convinced of the bad results of the course of instruction then pursued. In the year 1871, he prepared a lecture which was delivered before the Royal United Service Institution, in which he brought prominently into notice the opinion which he had then formed upon the subject.¹ He was at that time very deeply impressed with the incompatibility of the position of an Officer and a schoolboy. In alluding to the examinations as carried out afloat, he observed :—

"That they show a waste, and not only a waste, but a misapplication of time and labour, which is well known and understood by all those who have served recently in a squadron."

And further on in this lecture, when commenting upon the Report of the Committee on the Higher Education of Naval Officers, he observes,

¹ *Vide Journal*, vol. xv, No. LXIV, 1871.

—and the observation could be corroborated by other Officers who have commanded ships:—

“I, and many others with me, have been too long witnesses to the zeal and attention of Naval Instructors, and to the constant striving with the difficulties of instruction in a service afloat, to agree with the Committee. We know that in trying to promote the instruction of our midshipmen, whether as Gunnery-Lieutenants, Naval Instructors, Commanders, or Captains, we have signally failed to obtain either the time or the opportunity we desired, and that we have had to record a constant failure to carry out the most modest programme of any study, in consequence of the loss of time and opportunity which the conflicting duties of a sea-going ship occasion.”

The scheme proposed by Captain Goodenough to remedy this defective education was briefly as follows:—Cadets were to be examined for entry at the average age of fifteen, and after two years' training at a naval college, and in training corvettes, they were to be examined for the rank of midshipman. They were then at the average age of seventeen to receive one year's training in practical gunnery, at the conclusion of which time they were to be sent to a ship of the fleet for one year's service as midshipmen, and then they were to pass as now for Sub-Lieutenants. A plan somewhat similar in principle and detail was proposed elsewhere by the late Rear-Admiral (then Captain) C. W. Hope.

Passing from the notice of the above suggestions, to the schemes actually in force in other Navies, it will be observed that they all agree in the respect of entry at a comparatively late age. To a considerable extent they are similar to the system of naval education that exists in France. But upon a close investigation of the manner in which, for instance, the preliminary training of young Officers is carried out in that country, nothing is more certain than the fact that such a system could not be adopted in England. In France the annual competitive examination is announced, and lads of seventeen are invited to compete. The Admiralty have, perhaps, fifty vacancies, and these are given to the fifty who head the list. These are then sent on board the training ship “Borda,” at Brest, and there undergo a course of training such as but few English lads of that age would willingly submit to. The course of study in the “Borda” occupies two years, and includes a fair amount of practical seamanship, learnt on board the sailing brig and steam sloop attached to the “Borda,” in the Brest roads. At the expiration of these two years, the “*élèves*” (cadets) are sent to a sea-going training vessel (now “*La Flore*”) to advance their education as seamen, and to study the interior economy of a man-of-war. At the end of this period they pass an examination of proficiency and are made “*aspirants de la première classe*.” They are then sent to sea on board a sea-going ship-of-war for two years, and then at last at the expiration of this period, and without further examination, they are promoted to the rank of Sub-Lieutenant.

By this system, Officers are kept in training at far too advanced an age, and begin their active service career much too late.

In America, the method of training their Officers is much injured by the excess of nominations as compared with the numbers actually

required for their Service, and here, again, we see a system in force through which Officers are kept too long in the junior ranks. Beginning their career at the average age of sixteen,¹ they have to undergo a long training of four years at the school at Annapolis, then they have two years' service in a ship-of-war, and then after passing a final examination, become qualified for the rank that is equivalent to our Sub-Lieutenant. In Germany, also, Officers are, as a rule, considerably older than ours before they become qualified for the rank of Sub-Lieutenant.

Thus it may be said that the system of naval education in foreign Navies cannot be considered as applicable to Great Britain. If, then, it be granted that our present Regulations for the education of our young Officers are defective in their results, and it is thought desirable that some new system should be adopted, there is no system past or present which is of much practical use as a guide, and therefore any proposed plan must necessarily be theoretical, and its value can only be tested by the experience of several years. The scheme proposed by Captain Goodenough would probably be found to have great practical advantages, but it seems partly to have the same fault as the system now in force, viz.: that a portion of the midshipman's life, equal to one year, is passed on board a ship without adequate training. If, as at present, it is thought that four years are thus in a considerable degree wasted, it also follows that in a proportionate degree one year's service, as proposed, would be wasted.

In now submitting a proposition of somewhat different character, it has to be observed, in the first place, that it is based upon a belief that it will ultimately be found expedient to abandon our existing methods of training. According to present Regulations, no candidate is eligible for examination unless his age exceeds twelve, or does not exceed thirteen and a half. The training on board the "Britannia" lasts two years, and the subsequent period of service as midshipmen in ships-of-war on active service averages four years, but is in some measure dependent upon the class of certificate obtained on leaving the "Britannia," a less time being required for boys who have shown exceptional qualifications. But no midshipman can be examined for Acting Sub-Lieutenant before he is nineteen, and then, as soon as is practicable, after this examination, he is sent to England to study for his final examinations in mathematics and gunnery.

In consequence of the time occupied in studying for and passing these examinations, a considerable part of a Sub-Lieutenant's service is more or less removed from the active duties afloat of his profession, and to so great an extent is this the case, that although the number of Sub-Lieutenants would, if available for sea service, be amply sufficient for the requirements of the fleet, in practice it is found that it is with difficulty that an adequate number of these Officers can be appointed. Consequently Sub-Lieutenants are absent from sea service precisely at the age when it is most important that they should be

¹ They must be more than fourteen, and less than eighteen.

making themselves conversant, by a practical experience, with the duties which devolve upon them when promoted to the rank of Lieutenant.

Instead of the present Regulations, it is proposed that the age of examination for entry should not be less than fifteen and not exceed sixteen and a-half. The training on board the "Britannia" or at a naval college should continue for three years, and in every year the summer months might be occupied in studying practical seamanship in a training vessel at sea.

At the expiration of this time the cadet should pursue a special course of training in gunnery, steam, torpedoes, and such elements of naval construction as are connected with the special requirements of modern warfare. Upon the completion of this course, and at an age not less than nineteen, the cadet will be eligible for examination, which would be final with respect to mathematics. Upon obtaining a certificate of proficiency, he should then receive his commission, and be appointed to the Navy as a Sub-Lieutenant, and be immediately employed upon active service. Whilst holding the rank of Sub-Lieutenant, he would not necessarily be considered as capable of being held responsible for the correct execution of the duties of Officer of the watch in ironclad ships at sea. The period of service as Sub-Lieutenant should be considered as one of special naval training, and be chiefly devoted to the mastering of all the details of service as carried on in ships-of-war, and in becoming acquainted with the handling of such ships, not only as regards their individual management as Officer of the watch, but also with respect to the general manœuvring of a fleet. The requisite length of service as Sub-Lieutenant would be determined by circumstances, and by such rules as the Admiralty might deem expedient, but it would probably be found in practice that an intelligent Officer, who had pursued with attention his naval training in seamanship and gunnery, would require less than two years to become competent to fulfil all the duties of a Lieutenant in charge of a watch; and he might then present himself to pass a test examination in seamanship and in gunnery, and upon passing become eligible for promotion to the rank of Lieutenant, a rank which should be given to him as soon as possible, if the state of the list permitted.

Such is the outline of a scheme which the essayist believes would be found practicable and would give good results.

In the above scheme it has been considered advisable that the principle of a special naval education in the "Britannia," or in a college under the control of the Admiralty, should be retained. During the three years' training it would become evident if a student was, through want of general ability or health, unfitted for sea duties, and would therefore have to be removed. The Admiralty could thus ensure the Sub-Lieutenants being of the requisite standard of efficiency. The establishment of a cruising training-ship might be so regulated that each Officer, upon the completion of his training, should have had not less than four months' practical experience of sea duties, including personal management of the ship under various

conditions of wind and weather. Finally, before quitting this most important subject, it must be observed that the more our executive Officers are methodically trained, the greater becomes the strength of our Navy. In a naval action the loss of certain special Officers, such, for example, as the gunnery and torpedo Officers, would be a serious misfortune; and the more that each Officer is so trained as to be capable of carrying out correctly these special duties, the greater becomes the fighting efficiency of our ironclad ships.

The subject of our executive Officers has been considered chiefly with respect to the training for the rank of Lieutenant; their higher education would consist as at present of a course of voluntary study at the Royal Naval College at Greenwich. The training of engineer Officers has produced such excellent results, that it leaves nothing to be desired. With respect to our warrant officers, the additional advantages given to them lately will no doubt have the effect of causing more men to come forward to pass for the warrant. Every encouragement should be given to obtain from a good source a sufficient number of these most valuable Officers.

In an earlier part of this Essay it has been observed that although the continuous service system for the manning of our fleet has been found to have been of great advantage to the State, it has the grave defect of making the complements of our ships' companies too young, and in considering our ironclads as ships prepared for battle, this element of youth is a constant and ever present cause of weakness.

So important, indeed, is this fault, that in estimating the strength of our ships' companies with reference to those of the ships of other maritime Powers, our boys and younger ordinary seamen ought not to be considered as forming part of the complements. It is also expedient that the bodily strength of our young seamen should be thoroughly satisfactory before they are finally pronounced fit for the naval Service. As far back as 1871, when physical qualities were even less necessary than in the present day, the Admiralty, in their Circular of the 4th March of that year, drew attention to this subject in the following words:—"In consequence of the size of Her Majesty's ships and their heavy armaments, my Lords Commissioners of the Admiralty consider it to be of great importance that the men entered for continuous service should be strong, able-bodied, and physically fit for the duties required of them:" and they further directed, with reference to a previous Circular respecting ineligible boys, that all boys unfit for the Service were to be discharged. The difficulties inherent in the continuous service principle make it impossible always to comply with these requirements, and in practice an undesirably large number of lads and youthful seamen, who are comparatively deficient in physical power, have to form part of the constitution of our ships' companies.

Assuming, then, that it is expedient that measures should be adopted to give a character of greater manual strength to our ships, it remains to be seen in what manner such a desirable result can be obtained without extensively changing our continuous service system. In the first place there is the simple plan of maintaining the system as it is,

and of lengthening the period of training; but if this should be considered inexpedient or too expensive, it is proposed to raise the age of entry of boys. The present Regulations require that they should be between the ages of fifteen and sixteen and a-half. That age might be extended to eighteen, care being taken to ensure sufficient qualifications of strength and stature. Boys entering at a late age should be trained in a special ship.

Nothing is more undesirable than compelling lads of greatly differing ages to perform a similar course of study, and be subject to similar restrictive rules. A plan adopted some years ago of detaching a number of our first-class boys in the training-ship from the general system of training, which included those of the second class, had good results; and the older boys thus placed in the "Boscawen" were said to be in consequence much improved in zeal and general smartness. It is not expedient to enter into any details respecting the subsequent training of boys so long as it is decided that they are not to form part of the complements of our ships-of-war before they are twenty years of age. The methods of training after quitting the school ships will necessarily consist of certain periods of service in a training squadron. When barracks are established there will be a special course of gunnery and musketry. These matters of detail are, however, dependent upon circumstances, and there is only this to remark, that in proportion to the raising of the average age of entry, so the expenditure caused by our training service will diminish. Assuming the cost of each boy under training to be at least 60*l.* a-year, the reduction by one year of the period of inutility for active service in ships-of-war would represent a considerable annual reduction in the charge upon the Estimates.

One of the chief advantages of the special State training of boys, is that through not being accustomed to other modes of life than what are pursued in a man-of-war, they readily volunteer to re-engage at the conclusion of their ten years' engagement, and consequently a steady supply of petty officers is obtained. A similar advantage follows upon the training of the "mousses" in France. The school ship "Austerlitz," at Brest, has usually on board about 800 boys, and of these an average of 300 are annually embarked in ships-of-war on active service. They are then subjected to a careful system of training with the object of obtaining from them an intelligent and capable nucleus of petty officers. The result at present is, that fully one-half of the French petty officers are derived from boys trained by the State.

In accordance with the general principle of manning the Navy with men of matured strength, it might be found useful to permit the entry of men between the ages of twenty-one and thirty, and who would receive a sufficient training in the home ports before final embarkation. The establishment of barracks would much facilitate this plan. Reserve men of the first and second class should be encouraged to join, and if after certain fixed periods of service they did not re-engage, the time served in ships-of-war should have a special value with respect to their ultimate pensions as Reserve men.

Men who, at the age of forty, had served ten years, should also, whether Reserve men or not, be entitled to a moderate pension, on the condition that they would be liable to be called out on service in case of war. There can be no doubt that it will be found there will be a sufficient number of volunteers for the requirements of the fleet. One great advantage of entering a certain proportion of men above twenty-one years of age will be, that we shall be more capable of increasing our Coast Guard, the Reserve upon which we must chiefly depend in the event of war. When the two systems are at work at the same time, viz., the training of boys and the entry of adults, it will be important to regulate the proportion that one class of seamen should bear to the other.

In the course of his evidence before the Royal Commissioners in the year 1859, Captain Harris, who had previously commanded the training ship for boys and novices, said, with reference to drills and great gun exercise, that a young man commencing to learn his drills at twenty would, in the course of a year or so, be made as perfect in them as if he had commenced it at fourteen. The short space of time in which lads of twenty and twenty-one, received from fishing boats, attain proficiency in their drills at Brest, is a sufficient proof of the rapid manner in which entirely untrained men can become qualified to take their place at the guns.

Indeed, there is no better evidence of the average aptitude of men to reach a fair standard gunnery efficiency than to observe how quickly our Naval Reserve men learn their drill, although they only devote twenty-eight days in the year to that object.

It is perfectly possible so to organize our *personnel* for service in ships in commission that all the seamen on board should be efficient and able-bodied, and this result could be obtained without any additional charge upon the Estimates. All ineligible boys and men should be discharged. The continuous service engagement of a boy might contain a proviso that in the event of his proving to be undesirable, through bad character, deficient strength, or incapacity, his engagement would be cancelled.

Ordinary seamen raised from boys, who do not evince such qualities as will make them useful as trained men, should no longer be a burden upon the State, but upon proper representation be liable to be discharged. In fact, no inefficient men ought to be permitted to form part of the complements of our ships.

These complements are gradually less as regards their proportion of seamen, and therefore it is very requisite that the men should be of the best type attainable.

As regards the entry of boys, it has been proved that sufficient numbers can be obtained with certainty from a satisfactory source. The question of manning our fleet has been so frequently combined with schemes for providing an outlet or a profession for our street Arabs, that this qualification of good original stock cannot be too much insisted upon. There should be no relation whatever between the training of destitute or vicious boys and the supply of seamen for the Navy. Whatever may be the expediency of providing for the future

career of these boys, such provision should not have employment in Her Majesty's Navy as a possible object. It would be in the highest degree unfair to our lads received from respectable homes and accustomed to respectable associates, to compel them to accept as their comrades in life, boys of doubtful origin and character.

In these days, when there are few probabilities of prize-money, and men-of-war's men have nothing to look forward to when serving but their bare pay and allowances, it becomes necessary, in order to secure a good class of petty officers and re-engaged men, that sufficient prospective advantages should be offered them.

It is certain that nothing now binds a sailor so much to the Service as the prospect of a pension, and nothing will attract a good and valuable class of men to our Navy more than the knowledge that this pension, if earned after good and steady service, would in part be continued to his widow. One of the principal causes which makes the Maritime Inscription in France work so well, is the fact that, at the end of twenty-five years' service, two-thirds of the pension thus earned by the men is continued to their widows or orphans.

Whether it would be possible in England for the State to organize such a seamen pension fund as would attach our merchant seamen more to their country and, if combined with a system of naval pensions, bring our naval and merchant seamen into closer relationship, it is not within the province of this Essay to consider; but there can be no reasonable doubt that it will not be until some pension fund is established, that our Mercantile Marine will be in a satisfactory condition.

But whatever may be the method adopted to give the merchant seaman a feeling of attachment to his country, and whatever may be the system pursued which will take away from him the feeling that he is a man utilized when strong, and uncared for and left unnoticed in age, such considerations fortunately do not apply to the seamen serving directly under the Crown. Our continuous service men receive good wages, and after twenty years' service, at a comparatively early age become entitled to pensions. It is still, however, a question whether the pay and pension may not be so arranged as to give strong inducements for attracting good men who would enter at a later age. Increasing pay with length of service would be equitable and popular, and a small increase of pension for additional service after the usual pension was due would probably be found advantageous. The subject of a fund or pension for widows or orphans has from time to time been brought under the notice of the Government, but it has always been combined with various plans of voluntary or compulsory subscription.

Judging from the working of the original Merchant Seamen's Fund, it does not seem probable that any such plan will succeed. Some years ago, in 1874, a number of petty officers, seamen, and marines submitted a scheme for a widow's fund. They asked the Admiralty if, by the payment of 6*d.* a month each, their widows or orphans could receive an annual pension of 24*l.* 22,000 men agreed to subscribe this sum. The Admiralty referred the question

to the actuary attached to the office of the Commissioners for the Reduction of the National Debt, and the reply was to the effect that not only was 6*l.* a month inadequate, but more than twenty times that amount would be required. Consequently such proposed pension scheme was impracticable. When looking back at the history of this question of a Widow's Fund, and the opinions and recommendations of many experienced witnesses examined with reference to that object by various Committees, together with the suggestions of those who, although not witnesses, were deeply interested in the welfare of our seamen, it is almost self-evident that no scheme entirely based upon voluntary contributions can succeed. Still less feasible would be any compulsory method of deducting portions of pay, and thus we are brought to the conclusion that any adequate Widow's Pension Fund must to a very great extent be supplied by the Government.

The principle of pensions for long and good services is not only equitable to the men, but also advantageous to the State, for it not only encourages our best seamen to remain in the Service, but it also gives to the country a valuable Reserve, for there can be no doubt but that our naval pensioners between the ages of thirty-nine and fifty will prove in time of war a most important addition to our strength. Many of them are petty officers, many are seamen gunners, several have been gunnery instructors, and all are thoroughly trained men. The value of such a Reserve cannot be too highly estimated. Therefore, as the pensions, as now granted, cannot be thought excessive when estimated by the services past and prospective of the men to whom they are given, it may fairly be taken into consideration, whether an extension of the principle may not be conceded to the extent of continuing a part of such pension to widows and orphans.¹ The question is an important one, and can only be properly dealt with by an exhaustive examination of the expenses that would be incurred, but judging from the cost of the system as carried out in France, it does not appear that the expense would be so great as might be supposed.

The expenditure involved in our system of continuous service must always be considerable, but it might be sensibly reduced, if all undesirable and inefficient boys or men were removed from the Service. A lad who deserts at twenty has already cost the Government over 200*l.*, and has certainly not been of any value, probably the reverse, as his habits and example may have led other lads into crime. It may be said that a too easy possibility of discharge might have the effect of making boys commit offences in order to get away from the Navy. Such discharge might also be looked upon as a premium for bad conduct by those who wish to leave the Service, but are deterred from so doing in consequence of their engagement, or from fear of punishment for desertion. It is, however, almost unnecessary to remark that boys or ordinary seamen, who are always

¹ The fund from which such widows and orphans' pension is taken would not form part of the expenditure in connection with the Naval Estimates.

wanting to escape from their duty, are not calculated to make good men-of-war's men, and are not worth keeping.

However, in all these cases, a continuous service system must be guided by the facility or difficulty of obtaining volunteers. If these are sufficient, objectionable men should be discharged, if the reverse, they must be retained. But in these days, with ships requiring comparatively few seamen, there ought to be no difficulty whatever in obtaining a well-selected and capable class of men. The clear and evident principle is this: that the complements of our ironclad fleets in commission in time of peace should be as thoroughly able-bodied and efficient as they would be expected to be in time of war.

Equal in importance with the calibre of our seamen is the question of the proportion of marines which should be embarked to complete the combatant part of the complement. The general opinion of the witnesses examined upon this subject by the Royal Commissioners in 1858-59 was against any change. The composition of our crews has altered since that time, and the present proportion of marines to blue-jackets is larger, but probably not too large for the various duties required of them.

It would perhaps, be unnecessary to dwell upon the acknowledged value of the Royal Marine Artillery and the Royal Marines, if it were not that of late years several Officers of experience have advocated their being no longer considered as an auxiliary arm of the Navy, and have proposed to replace them by seamen.

It may be granted that for sea service 13,000 trained seamen would be a very useful addition to our Navy, but where are they to come from? Looking at the matter from a practical point of view, it seems evident that the marines must be maintained, for it would be very difficult to raise such a fine body of men from the classes which now supply our seamen in addition to what we already receive.

The marines are recruited from an entirely different class of the population, and are taken to a large extent from the agricultural and manufacturing districts, which otherwise give but little strength to our Navy, and the majority of the men have been brought up to some trade. For reasons partly connected with pay and other special advantages, and partly consequent upon the nature of the Service itself, the marines are and always have been a popular corps, and recruits of a good standard can always be procured. When it is remembered that the marines can always be increased with comparative facility in time of war, that the recruits we receive for them are quick in learning their gunnery instruction, and when embarked are found to be steady at their drills, and reliable for their discipline; when these facts are considered, any suggestions for the disbandment of so valuable a corps should be received with grave hesitation. If, in order to increase the seamen gunners afloat, it was thought expedient to decrease the contingent of marines, this measure should be adopted without reducing the actual force of marines embodied, and the only consequence would be that the marines would pass a less period of

their service on board a ship. Thus, for example, if in a force of 12,000 men, an average of 6,000 are embarked, and 6,000 are in barracks, and if it was decided to increase our complements of seamen by 2,000 men, the marines would be embarked for one-third of their service, instead of one-half as at present, and would not thereby lose in any important degree their seafaring capacity.

The history of the Royal Marines has been so distinguished, and their services to the State in war and in peace have been so valuable, that it would be highly impolitic to disarm them, or even to permanently reduce their numbers. It may be added that they are an inexpensive force as compared with our seamen.

The marines must also be considered as forming one of the main elements of our standing Reserves. There are now usually from five to six thousand men in the barracks available in case a sudden increase was made of the ships in commission. This number, however, was not thought sufficient by the Royal Commissioners :—

“The marines,” they remark, “are a useful and efficient body of men, second to none in the service of the State. They are excellent troops, both as artillerymen and infantry, and are, at the same time, capable of performing many of the deck duties of a ship-of-war. . . . There is ordinarily a Reserve of 6,000 marines in the home ports ready for active service afloat. We think that this force might, with great advantage to the State, and without impairing its efficiency, be increased by 5,000 men, who would be well fitted to garrison the seaports in time of peace, and when required to serve at sea they could be at once embarked, and their places in the seaports supplied by the regular Army or the militia.”

This was written at a time when the Royal Naval Reserve was not organized, and there was then the greater necessity for a Reserve ready for immediate duty. This is no longer required to a similar extent, and although it is always desirable that the Reserve of Marines should be sufficient, there is the difficulty that if that Reserve was increased to the extent proposed by the Commissioners, the amount of sea service would be much less. There is an interval of time beyond which it would be inexpedient to separate the service afloat from the service on shore, and that naval sympathy which ought to exist in a sensible degree between the trained seaman and the trained marine would lose much of its influence. In fact, if the marines were too much considered as a Reserve, and were for long periods employed in garrisoning our ports or colonies, the peculiar characteristics which now make the marines so especially valuable for naval service would be greatly sacrificed. Thus it may be concluded that the number of marines, considered with respect to the peace complements of the fleet, and with respect to an immediate available Reserve, should be maintained at an average force of not less than between twelve and fourteen thousand.

In time of war this Reserve could be rapidly augmented. The recruiting for the marines is so thoroughly satisfactory, and the training for sea service is so good, that as regards the general question of the best methods of manning, there is but little to be proposed.

Perhaps it might be desirable either to increase the force of Marine Artillery, or to further develop the gunnery training of the Royal Marines. The object to be attained is what is now so universally

required, viz., efficient gunners, and probably that would best be secured by retaining the existing picked and highly intelligent force of Marine Artillerymen, and advancing the gunnery knowledge of the Marine Infantry to the highest point practicable.¹

Pursuing the subject of our standing Reserves, we have to estimate the probable value of our seamen pensioners. This force is steadily increasing and will continue to do so for a few years until the Pension Regulations established by the continuous service system have reached their full development. The Act which applies to this portion of our Reserve clearly defines their liability to serve, in these words, which may with advantage be quoted :—

“Whenever any emergency shall arise which, in the opinion of the Lord High Admiral, or Commissioners for executing the office of Lord High Admiral, renders it advisable to require the services in Her Majesty's Navy of any of the persons who may have served as petty officers or seamen in Her Majesty's Navy, and may be in the receipt of pensions in respect of such service, it shall be lawful for such Lord High Admiral or Commissioners to order any of such persons to join Her Majesty's Navy; and those so ordered shall join such of Her Majesty's ships or vessels-of-war as the said Lord High Admiral or Commissioners may at any time or times direct, and shall form the crews or parts of the crews of such ships or vessels, and shall continue to serve in Her Majesty's Navy during such time as such emergency may, in the opinion of the said Lord High Admiral or Commissioners, continue, and while so serving shall be entitled to the same pay and allowances, according to their respective ratings on board such ships or vessels, as Officers in Her Majesty's Navy and men in Her Majesty's Navy entered for ten years' continuous and general service, and shall also continue to receive their pensions.”

In 1870, the Board of Admiralty, deeming it desirable that the pensioners should keep up the knowledge of their drills, established regulations giving certain allowances to such of these men as would volunteer to take a month's training every alternate year. These regulations have since been modified, and fourteen days' annual drill are now required, and this can be taken at any battery or drill ship, and at such periods as may be most convenient.

In 1876 there were 2,800 seamen pensioners under fifty years of age, and 511 attended drill. In 1879 there were 5,000 pensioners, and 1,166 were drilled. These numbers are less than might have been expected. The drilling of the pensioners, however, need not be considered to be of much importance, because the majority of them must have been thoroughly well acquainted with their gunnery exercises when they obtained their pensions, and therefore it is not likely that they would easily forget them. The value of our Reserve of seamen pensioners has perhaps not hitherto been adequately recognized. In case of war these men would be of great use. The younger portion of them, between thirty-nine and forty-five years of age, might supply excellent petty officers for sea service, and the older men could be employed for general duty at the home ports, especially those who had been gunners' mates or gunnery instructors.

The Naval Artillery Volunteers are in all respects so essentially distinct, that their probable use in the emergency of war can only be

¹ The training of a Marine Artilleryman has been stated to occupy about 280 days.

properly estimated when such emergency arises, and much will depend upon the length of time that the members of this force could be absent from their usual professional duties; but, judging from the efficient way in which they carry out their great gun drill and practice in the gunboats, and from the seamanlike manner in which they willingly perform all the ordinary work of a gun-vessel's crew, there is every reason to believe that they would prove a useful addition to our naval strength. They could be employed with advantage in our smaller coast defence vessels, in the event of our command of the Channel being threatened.

There is left for final consideration our Coast Guard, which is also called our First Reserve.

It is upon the strength of this Reserve that our preparation for war in the event of sudden hostilities chiefly depends.

By the Act of the 29th July, 1856, the government of the Coast Guard was transferred from the Customs to the Admiralty. It was then thought expedient, with the view of making a better provision than then existed for manning Her Majesty's ships in case of war, to place the force of men employed in the protection of the revenue under the direct control and authority of the Admiralty. The Admiralty was empowered to raise and employ a number of Officers and men not exceeding 10,000, who, when borne on the books of the ships-of-war, were to be subject to the same laws and customs as persons serving in the fleet.

This Act, in its relation to the strength it placed at the disposal of the Navy, is of the greatest importance, and if the powers it gave to the Admiralty could have been carried out to their full extent, our Reserves would have thereby been placed in a thoroughly satisfactory condition. The Royal Commissioners in 1859 thought so well of the Coast Guard, that they proposed to raise its numbers to 12,000 men. It has not been possible, however, to raise and maintain the force at either of the proposed establishments. But the Coast Guard, considered as a Naval Reserve, though not increased in numbers, has been greatly improved in its combatant efficiency. Our petty officers and trained seamen have during the last twenty-five years, and when at their best period of strength and capacity, been steadily passing from the active service afloat into the Coast Guard. The special classes of men that constituted that service when under the Customs are gone, and their places are occupied by a body of men-of-war's men of the highest value. Their numbers are, however, unquestionably too few, and this is so generally admitted, that on the various occasions when the subjects of manning the Navy and of establishing Reserves have been discussed, it has always been suggested to largely increase our Coast Guard. This, however, is a very difficult matter, for the Coast Guard as at present composed cannot be augmented without augmenting the peace establishment of our active Navy.

For some years past the vote for the Coast Guard has been taken for an average of 4,000 Officers and men. In this year 1881-82, the force is thus constituted:—Inspecting Commanders, 36; Divisional Officers, 43; paymasters, 11; clerks, 13; station officers, 227; chief

boatmen in charge, chief boatmen, commissioned boatmen, boatmen, and divisional carpenters, 3,670.—Total, 4,000.

Granting that it is desirable that this number should be increased, the question is, how can this be done?

The annual waste or loss of men in the Coast Guard, arising from completion of service for pension or other causes, averages 200, and consequently, to maintain the force at its normal condition, 200 good petty officers and seamen have to be annually transferred to it from the sea service.

It is found in practice that the constant drain upon our active resources is so serious, that it is difficult with due regard for the requirements of the fleet to supply this number.

It is found that the existing peace establishment of our seamen is just sufficient to man our fleets in commission, and to maintain the Coast Guard at an average force of 4,000 men; but it will do no more, and consequently the Coast Guard cannot be increased unless the vote for seamen is also increased, and additional ships must be kept in active employment in order to absorb the extra men.

The difficulty may be partially modified by encouraging to a great extent the entry into the Coast Guard of Naval Reserve men, but this should only be done within certain limits, as the chief value of the Coast Guard consists in its being composed of our trained men-of-war's men. It may be found possible if an older class of seamen is entered into the Navy, and the present great waste caused by the desertion and invaliding of our younger seamen is thereby reduced, to spare more men, and by this means the Coast Guard might be gradually raised to 6,000. It is not probable that this number could be conveniently exceeded without maintaining a much larger force of ships in commission in time of peace than are actually required.

Our First Reserve of Coast Guard is unquestionably the finest body of combatant seamen in the world, and in case of war it would furnish the nucleus for two considerable fleets.

Three hundred of our Coast Guardsmen, combined with contingents from the Marines and Royal Naval Reserves, would form a very efficient crew for any of our first class ironclads requiring complements of 600 men, and thus we might fairly estimate that, with our First Reserves of Coast Guard at their present strength, we could immediately from them alone man twelve powerful ships. But as the average complements of the ironclads which would be placed in the line-of-battle would not exceed 450, we may fairly consider our Coast Guard as capable of supplying a sufficient number of trained men-of-war's men for eighteen ships-of-the-line.

This would, under the probable circumstances of a great naval war, suffice at the commencement; but if the war was much prolonged, we should then feel the weakness in number of our First Reserve, and therefore it is expedient to increase it whenever the peace establishment of our Navy is in a condition to make such an increase practicable.

The questions concerning the best methods of manning, both with

regard to the requirements of active service, and their relations to the Reserves, have now been considered as far as the limits of this Essay conveniently permit.

The most important points of the subject may be said to be the training of young Officers for Lieutenants, the comparative youth of a certain proportion of our seamen on active service as compared with the ages of the seamen that would be opposed to them in war, and the means which our peace establishment of the Navy gives us for maintaining a strong First Reserve.

In the investigation of the supplies of men, it is necessary to avoid being misled by theories with respect to the numbers that should constitute our Reserves. In no branch of inquiry is it so essential to be strictly guided by not only what are the numbers available, but also what may be practicable.

Thus, as regards the Royal Naval Reserve, our present experience has taught us the fact that the Mercantile Marine cannot be expected to supply a force so great as the Royal Commissioners calculated upon, and that as a source of strength for the Navy in that direction, its power has nearly reached its limit.

Also, with respect to our Coast Guard, it would be impossible to maintain the force proposed of 12,000 men without increasing the numbers of men and ships of the Navy far beyond the requirements of peace, and to an extent that no Government would probably contemplate. Consequently all proposals for maintaining large numbers in the Reserves have to be carefully examined in their details, and be estimated with a strict regard to what can be practically carried out. There is, however, no doubt that it is advisable to strengthen our Reserve force in view of hostilities as far as possible, and for this purpose every feasible method should be adopted to increase our Coast Guard.

Such increase will depend chiefly upon two conditions, the first being the numbers available for it from the active service afloat; the second, the numbers that the duties of the protection of the revenue might require.

It is also desirable to remark that, independently of their value as a Reserve, the Coast Guard are of great use in saving life from wrecks, in working the rocket apparatus, and in assisting in the operations of the lifeboats. Many gallant services have thus been rendered by our Coast Guardsmen, and consequently their numbers might even be augmented beyond the actual requirements of the Customs, without such augmentation being considered an unnecessary charge upon the State. In this Essay it has not been proposed to raise the Coast Guard beyond 6,000 men, because it is not thought that it is at present possible to keep up a greater number; but so valuable is this First Reserve, that it should always be maintained at the greatest attainable strength.

The other Reserves are in such a satisfactory state of efficiency that there is nothing more to be observed, except that the Second Class Reserve should be increased. It is probable, remembering that the portion of our maritime population which furnishes these men does not

leave the country on long sea voyages, that this force would prove to be of the greatest use, and would be readily available when called out for active service.

The suggestions of this Essay, with respect to the numbers of the Reserves, may now be recapitulated.

The Coast Guard to be raised to 6,000 men, or as many as may be found practicable. The Marines, not employed afloat, to be maintained at a force of not less than 7,000 men. The First Class Reserve to consist of 15,000 men, and the Second Class Reserve to be increased to 8,000 men. Estimating our seamen pensioners at 5,000, the Reserves would then equal a force of 41,000 men.¹

These Reserves would be sufficient for the purpose of manning our fleets on the outbreak of hostilities, and would furnish the required supply of men during the early part of the war.

In the event of the war being much prolonged, we should have to rely upon the resources that Great Britain may reasonably be expected to develop.

¹ To these might be added our Naval Artillery Volunteers, now numbering 1,200 men, a number which will soon be augmented.

APPENDIX I.

Return showing the Numbers of Petty Officers, Seamen, Stokers, Artificers, Domestics, Boys, Royal Marines, and others Serving in the Royal Navy on the 1st day of January, 1879, distinguishing the Married from the Single Men, and specifying, so far as can be ascertained, the Ages of the Wives of the former.

Ages of men.	Numbers of men of each division of ages.		Wives.						
	Numbers of men of each division of ages.		Numbers of undermentioned ages for each division of men.						
			Ages.						
	Single men.	Married men.	Under 20.	20 to 25.	25 to 30.	30 to 35.	35 to 40.	Over 40.	Total.
Under 20	10,911	22	10	11	1	..	..	..	22
20 to 25	15,851	1,250	115	1,001	124	8	..	2	1,250
25 to 30	6,649	3,028	71	1,171	1,616	151	18	1	3,028
30 to 35	2,452	3,705	18	448	1,619	1,426	183	11	3,705
35 to 40	1,524	4,112	6	164	824	1,631	1,364	123	4,112
Over 40	685	2,861	1	14	130	408	888	1,420	2,861
	38,072	14,978	221	2,809	4,314	3,624	2,453	1,557	14,978
Total									53,050

Admiralty, July 17, 1879.

APPENDIX II.

Statement showing the Number of Boys entered for the Navy for each Year during the last Twenty Years; the Number of Boys who have been Discharged from the Service by Purchase, Invaliding, Death, Desertion, and Disgrace; and of the Number of Boys remaining in the Service at the end of each year.

Date.	Number of boys entered.	Discharges.						Total.	Number of boys remaining at end of year.
		Purchase.	Invalided.	Died.	Deserted.	Disgraced.	Other causes, unfit, objectionable, &c.		
1855-56	3,237	19	152	77	398	..	These discharges were not distinguished in these years.	646	8,546
1856-57	3,911	62	270	102	680	..		1,094	7,310
1857-58	1,939	36	167	77	258	..		538	6,373
1858-59	1,974	27	112	53	211	11		414	5,389
1859-60	4,460	51	171	70	235	17		544	8,307
1860-61	3,655	86	232	89	383	12		802	9,265
1861-62	3,312	109	294	99	453	21		976	8,362
1862-63	2,703	80	269	78	418	33		878	7,470
1863-64	2,766	41	205	60	258	25		589	7,092
1864-65	1,839	24	281	46	278	10		639	6,391
1865-66	2,344	18	139	38	226	9	These discharges were not distinguished in these years.	430	6,829
1866-67	3,220	37	203	43	336	15		634	6,901
1867-68	3,176	33	231	45	233	8		550	7,400
1868-69	2,408	26	210	47	261	8		7,330	7,400
1869-70	1,927	22	220	61	328	6		552	6,474
1870-71	3,295	12	205	104	280	4		637	6,997
1871-72	3,187	14	193	41	212	4		507	7,584
1872-73	2,961	25	255	38	261	2		633	7,185
1873-74	2,918	15	234	27	263	1		581	6,457
1874-75	3,079	25	208	22	263	2		551	6,204

Admiralty, June 23, 1876.

APPENDIX III.

Return¹ showing Numbers of Men (exclusive of Masters) employed in the Home and Foreign Trade, not including those in River Steamers, for the years 1860, 1865, 1870, and 1874-80.

Year.	Sailing ships.	Steam vessels.	Total.
	Men.	Men.	
1860.....	145,487	26,105	171,592
1865.....	158,589	39,054	197,643
1870.....	147,207	48,755	195,962
1874.....	128,733	74,873	203,606
1875.....	126,240	73,427	199,667
1876.....	125,811	72,827	198,638
1877.....	123,563	72,999	196,562
1878.....	120,085	75,500	195,585
1879.....	115,177	78,371	193,548
1880.....	108,668	84,304	192,972

APPENDIX IV.

Number of Foreign Seamen¹ serving in Registered Sailing and Steam Vessels of the United Kingdom (exclusive of River Steamers) employed in the Home and Foreign Trade, from 1860 to 1880.

Year.	Number of foreign seamen employed.	Percentage of foreign to British seamen employed.
1860.....	14,280	9·0
1861.....	Not specified	—
1862.....	16,096	10·2
1863.....	18,933	11·4
1864.....	21,923	12·6
1865.....	20,280	11·4
1866.....	Not specified	—
1867.....	21,817	12·5
1868.....	20,263	11·4
1869.....	20,153	11·4
1870.....	18,011	10·1
1871.....	17,765	9·76
1872.....	20,591	11·24
1873.....	19,840	10·87
1874.....	20,919	11·45
1875.....	20,673	11·55
1876.....	20,911	11·76
1877.....	22,636	13·01
1878.....	23,343	13·55
1879.....	24,403	14·43
1880.....	23,280	13·72

Note.—The actual importance of the numbers of foreign seamen here given is greater than might be assumed from the percentage, as the foreigners employed in our merchant vessels are usually able-bodied men.

¹ Extracted from "Tables showing the Progress of British Merchant Shipping." Board of Trade, March 10, 1881.

APPENDIX V.

Return of Seamen (Blue-Jackets). Admiralty, 9th August, 1875.

Total number of seamen in Her Majesty's Navy on 1st October, 1875 (exclusive of Kroomen, 426).....	29,743	} 33,616
Coast Guard on shore on 1st October, 1875	3,873	
blue-jackets in Her Majesty's Navy on 1st October, 1875.....	19,283	

The Annual Statistical Return, completed to 31st March, 1875, shows 27,430 engagements of continuous service men in force (including Coast Guard men on shore), their respective periods of service being as follows:—

In 1st year.	2nd.	3rd.	4th.	5th.	6th.	7th.	8th.	9th.	10th.	11th.	12th.	13th.	14th.	15th.	16th.	17th.	18th.	19th.	20th.	Total.
3,741	2,674	2,073	2,120	1,974	1,522	1,439	1,477	1,387	1,001	555	639	831	992	1,106	1,241	724	643	673	558	27,430 ¹

but the Returns in the Department do not distinguish blue-jackets from others.

¹ This total includes continuous service men other than blue-jackets serving in Her Majesty's Navy, viz.:—

Artificers, &c.....	5,762
Ships' stewards, cooks, &c.....	389
Coast Guard on shore.....	2,259
	8,410,

there being also a slight difference between the numbers borne on the 31st March, 1875, and those shown above as borne on 1st October, 1875.

APPENDIX VI.

Extract from Return from Admiralty to order of House of Commons,
1870-74.

	1870-71.	1871-72.	1872-73.	1873-74.
Number of <i>bond fide</i> seamen who were rated from boys	2,307	2,075	2,697	3,039
Number of <i>bond fide</i> seamen serving in the fleet.....	18,726	18,330	18,960	18,949
Number of Coast Guard fleet men <i>bond fide</i> seamen.....	3,774	3,733	3,891	3,723
Number of <i>bond fide</i> seamen who left the Service from all causes (including those who entered the Coast Guard).	3,101	2,464	2,847	2,880

APPENDIX VII.

Extract from Return of the Number of Seamen (including Officers), Boys, and Marines voted for the Royal Navy, and actually borne, together with the Number of Men employed in the Commercial Marine.

Year.	Royal Navy.					In registered ships belonging to the British Empire.	Peace or war year.
	Seamen.	Boys.	Marines.	Total voted.	Total borne.	Men.	
1762.....	50,939	None.	19,061	70,000	84,797	..	War.
1772.....	18,336	"	6,664	25,000	26,299	..	Peace.
1782.....	78,695	"	21,305	100,000	105,443	..	War.
1792.....	11,575	"	4,425	16,000	17,361	118,286	Peace.
1802.....	100,000	"	30,000	130,000	77,765	154,530	"
1812.....	113,600	"	31,400	145,000	144,844	165,030	War.
1813.....	108,600	"	31,400	140,000	147,047	165,537	"
1822.....	13,000	"	8,000	21,000	23,806	166,333	Peace.
1832.....	18,000	"	9,000	27,000	27,328	161,634	"
1834.....	17,500	1,000	9,000	27,500	28,066	168,061	"
1842.....	30,500	2,000	10,500	43,000	43,105	214,609	War.
1852.....	26,000	2,000	11,000	39,000	40,451	243,512	Peace.
1856.....	50,000	10,000	16,000	76,000	..	267,573	War.

General Register and Record Office of Seamen,
November 16 1858.

APPENDIX VIII.

Extract from Navy Estimates, 1881-82.

	1880-81.	1881-82.
Flag Officers and their retinues	166	187
Commissioned and other Officers above the rank of subordinate officers.	2,691	2,582
Subordinate officers and naval cadets under training ..	585	617
Warrant officers	825	826
Petty officers, seamen, &c.	31,433	30,988
Boys for service in the fleet.	} 4,900	{ 2,500
Boys under instruction		
Coast Guard Service on shore.	4,000	4,000
In troop ships for Indian service	1,200	1,200
<i>Marines.</i>		
Headquarter Staff	10	10
Divisional and Company Officers	399	398
Non-commissioned officers and men	12,591	12,592
General total	58,800	58,100

ESSAY.¹

ON THE BEST METHOD OF PROVIDING AN EFFICIENT FORCE OF OFFICERS AND MEN FOR THE "NAVY," INCLUDING THE RESERVES.

By Lieutenant CHARLES CAMPBELL, R.N., H.M.S. *Agincourt*.

"Le Personnel sera toujours l'Âme du Matériel."

BARON GRIVEL.

INTRODUCTION.

THE following essay is offered to the judges, written under the strong belief that, stimulated by the panic which the near approach of war must inevitably create, open competition would quickly remove all difficulty with reference to the *matériel* of the fleet, and that the real and almost insurmountable difficulty will be to have a sufficiently trained and organized *personnel* to command, officer, and man the innumerable ironclads, cruisers, gunboats, trade destroyers, &c., which it is obvious must be put in commission.

Before this goes to press, I wish to express my thanks to the authors and speakers whom I have done myself the honour of quoting.

CHAPTER I.

Officers.

The standard of efficiency to which all officers ought to aspire, and to which the main body ought to attain, must, in a Service with such glorious traditions as the Navy, be a high one! There is (both in theory and practice) absolutely no end to the subjects with which the typical Naval Officer should be familiar and to the practical knowledge which he should acquire. While the steps which are being taken to educate the men continue, and while the men show so much capacity and readiness to be taught as they do at present, the Officers are bound to strain every nerve in order to retain that mental advantage which is absolutely necessary to the efficient state of discipline in a man-of-war.

In the ironclad and cruiser fleets of our time, high scientific attainments must be combined with practical sailing seamanship, of as high an order as was ever required in the days when we trusted to sail and its management for our supremacy on the high seas.

¹ Honourably mentioned. The order given to these Essays in the Journal is that given in the report of the Referees. An Essay with the motto "*Parvi nominis umbra*," although not recommended to be printed, is honourably mentioned.—Ed.

To this end, those in charge of the government of this country during the greater part of this century, and especially in later years, have given the subject of scientific and practical training in the Navy their most serious attention. Numerous experiments have been tried, some of which have failed, leaving scarcely a record behind them of their existence, while others have met with success and gradually got united until we arrive at the system of education which is now in force, and under trial, and which aims at meeting the requirements of the age. That the stage at which we have arrived is tentative, and the system as yet undeveloped, is stated both by foreign critics and by our own, and we may hope that we are only resting a little in order to make a spring forward; "*Reculer pour mieux sauter*."

Professor Soley, while in this country, formed the opinion that "every year more is to be heard in the way of discussion of naval education, and every year more comprehensive and reasonable views seem to gain ground," and adds, "that the Government is likely to stop at its present stage in reforming the education of Officers is very improbable, and as the Naval College at Greenwich is now firmly established, it will hardly be many years before further, and perhaps more radical, changes take place in the English system."

The principle upon which the system of education for Naval Officers at present is based is at least a sound one. From the date of nomination to the final examination for Lieutenant, all have to go through the same training, and pass the same tests; but there the matter ends, as far as compulsion is concerned; but not if an individual has any educational ambition, for every inducement is given to all to continue their previous studies and add to their knowledge, many tempting prizes of higher pay, rapid advancement, sums of money, &c., being given by the Admiralty in order to stimulate their exertions.

Such being the basis of the present system, let us pause a moment and notice the steps by which it has been formed, in order that we may prepare our minds for suggestions as to its further development; for we repeat that it is impossible to obtain one glimpse of the future but through the medium of a reflected past, and hold with Locke that "Reasoning is nothing but the faculty of deducing unknown truths from principles already known."

The earliest record we find of the authorities attempting the education of Naval Officers is in 1729, when the Naval Academy was established, and the age fixed at between 13 and 16, the result of an Order in Council of the 21st of February previous.

In 1806 the name of this establishment was altered to the Royal Naval College, and in 1816 the age of entry was fixed at $12\frac{1}{2}$ to 14, and the college united to the School of Naval Architecture. In 1821 the age was again altered to $12\frac{1}{2}$ to $13\frac{1}{2}$, and so continued till the close of the establishment in 1837.

After abolishing the college, the authorities appear to have devoted their attention to the improvement of the instruction afloat, and to raising the standard of the Naval Instructor class.

In 1839 the Royal Naval College was again opened, but under a

different system, and without the early training, in fact, upon the system which now exists at Greenwich, then in a crude stage, and without the voluntary class for Lieutenants, which we now regard as its most important feature.

There was little or no further change made until 1857, when the want of an early training school was felt. This want was supplied by fitting out the "Illustrious," two-decker, at Portsmouth, and shortly afterwards relieving her by the "Britannia," which, with some reforms, additions, changes of port, and increase of height of standard, is the naval training school of England to-day.

Whether that training school should exist in a hulk, or in a college on shore, and at what age cadets should join one or the other, and at what age they should be drafted to sea, are primary and burning questions which must be fully discussed while endeavouring to find "The best method of providing an efficient force of Officers for the "Navy."

Where are we to get the raw material? At what period of existence will it be most readily shaped to our requirements, and where shall we place our manufactory in order that the country may reap the greatest benefit from the result? These are the questions which have absorbed the attention of the pioneers in naval education during the greater part of the century and are at present open for discussion.

These questions must be taken separately, for a great part of the evidence which is at our disposal deals with the subject under the heads of—

1. Competitive, limited competition and nomination.
2. Later entry and college.
3. Later entry and "Britannia."
4. College and training ship.
5. "Britannia" with or without training ship (sea-going).
6. Moderate early training, and instruction afloat.
7. Complete early training and no instruction afloat, &c., &c.

On the whole, we find that the mass of the initiated are in favour of the present system and age, subject to changes in detail according to the various ideas of the speaker or writer.

The Service is indebted to Lord Monteagle¹ for calling attention in the House of Lords to the present system of naval education, and the limit of age for the admission of cadets to the service.

He pointed out, "that the cadets first received scientific instruction "in the 'Britannia' for two years; that they were then sent afloat "for five years to learn practical seamanship, after which they went "to the college at Greenwich, to resume their studies. He suggested "that their scientific and practical education should be combined in "one educational course and that, in order to enable them before "entering the Service to have the advantage of the more liberal "education given in the public schools, the limit of age should be "raised to 15 or 15½." Lord Sidmouth stated "as the opinion of

¹ House of Lords, May 6th, 1881.

"all the most distinguished Naval Officers, that unless a lad was sent
"to sea at an early age he never would become a thorough seaman."

SHOWING PRESENT STUDY, H.M.S. "BRITANNIA."

The following Tables will show the present distribution of time for the twenty-eight hours of mental work:—

TABLE NO. 1.

(A) *Watch in Study.*

Subjects.	No. of hours in each Form.			
	First Form.	Second Form.	Third Form.	Fourth Form.
	Hours.	Hours.	Hours.	Hours.
Arithmetic	3	2½	..	..
Algebra	3	3	3	3
Euclid	3	2½	2	2
Plane trigonometry	3	3	3	2½
Spherical trigonometry .. .. .	..	..	2	3
Dictation	1	..	..	..
Navigation .. .. .	..	2	} 3	2½
Nautical astronomy .. .. .	..	..
Essay	1	1	1	1
Total	14	14	14	14

(B) *Watch out of Study.*

Instruments .. .. .	..	1½	2¾	2¾
French	3½	3½	3½	3½
Drawing	2½	2	2	2
Seamanship	4¾	3½	3	3
Latin	2½	2½	2	2
Physical geography	1½	..	..	..
Astronomy and dictation .. .. .	..	1½	..	..
Physics .. .. .	..	..	0¾	0¾
Total	14	14	14	14

Lord Dalhousie (than whom we could scarcely find a stronger or more modern authority) condemned *both* the present limit of age and the existing system of instruction. He would raise the limit to 15 or 16, abolish nominations by the Admiralty, and leave selection to the Civil Service Commissioners. He would send the cadets straight to sea for six months when they entered the Service, at the end of that period (if still willing) to the Naval College for two years, and then to sea again.

His strong points in favour of his line of argument were that
"our system stands by itself and is totally unlike that of every other

"nation in the world, and that the systems of America, Russia, France, Germany, Sweden, and Denmark in some degree resemble each other, and are all of them widely different from ours. That our best Officers are by no means unanimous as to the advisability of sending boys to sea as soon as possible. That some Officers think that cadets should not only be entered later but that they should be systematically taught both the theoretical and practical parts of their profession, as much at least as they require to know in order to perform its ordinary duties, before they are sent to do the work of Officers in sea-going ships."

In this last statement lies the germ of the entire question of naval training and it may be sub-divided as follows: whether—

- (1.) Should we retain the present system and trust to the Naval Instructor and to the energy and hard work of the pupil to overcome the difficulties which surround the education of Officers during the intermediate period between leaving the "Britannia" and joining the college as Sub-Lieutenants; or
- (2.) Should we leave the boys for general education at the public schools until of such an age as to require no further instruction afloat, and so do away with the Naval Instructor in sea-going ships and limit the training to practical seamanship, gunnery, steam, &c.; or
- (3.) As we would suggest, "send them to the 'Britannia' for three years." "Withdraw all Naval Instructors from cruisers" (in fact from all ships not first class ironclads), and give them a full complement of midshipmen for instruction in practical seamanship and actual practice in "keeping Officer's watch." After which, as near as possible to the beginning of their last year, send them to a first class ironclad either on the West Indian, Mediterranean, or home station, for finishing in discipline, ironclad seamanship, tactics, handling and Naval Instructor's work. Then for a thorough course of study at Greenwich, and gunnery, torpedo, tactics, &c., on board the "Excellent" and "Vernon;" then three years to sea, two as Officers of the watch in the cruisers and one as signal mates, mates of decks, &c., in large ironclads; then promotion and a compulsory second year at Greenwich during which at least one foreign language must be perfected and a tactical course. At the end of this year, Officers must elect special lines, and go for one year to sea in large ironclads as Officers of the watch, also attending a course of boat tactics in harbour. They would then return to the college for a third year to study their *specialité*.

Those who do not take up any special line to fill the appointments as first or only Lieutenants of small craft, third, fourth, and fifth of large ironclads and the general duty of the Service.

It was on the point of the absurdity of trying to train a midshipman, practically as a seaman and in the study of the sciences, at one and the same time, that Lord Dalhousie was not to be gainsaid.

TABLE NO. 2.

SCHEME FOR TRAINING EXECUTIVE OFFICERS.

Training.	Length of Time.	Age.
Entry by nomination and limited competition.	..	12½ to 13½.
"Britannia" { General Education	one year	13 to 14.
Seamanship ½	} one year	14 to 15.
Professional ½		
General ½	} one year	15 to 16.
Seamanship ½		
Professional ½	} one year	15½.
Circulation		
Practical seamanship, cruiser	2½ to 3 years	15½ to 18½.
Scientific study and ironclad seamanship	one year	18½ to 19½.
Greenwich College	9 months	19½ to 20½.
"Excellent," "Vernon," and tactical course	9 months	20½ to 21.
Seamanship, practical	3 years	21 to 24.
Promotion .. ..	.. ..	24 to 24½.
Lieutenant's scientific study, tactics, languages.	{ one course of 9 months.	} 24 to 25.
Ironclad, watch keeping	one year	
Special study for elected course for <i>specialité</i> .	{ one year	} 26 to 27.
Optional Commander's course	9 months	
Optional Captain's course.. ..	9 months	40 to 56.

N.B.—This scheme is subject to the requirements of the Service, and is entirely for "peace time."

TABLE NO. 3.

ROUTINE FOR MIDSHIPMEN IN SEA-GOING IRONCLAD.

Watches.

Monday	forenoon and first.
Tuesday	afternoon and middle.
Wednesday.. ..	4-6 and morning.
Thursday	6-8 and night in, and so on.

	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
6.30	Turn out and dress.	Turn out and dress.	Turn out and dress.	Turn out and dress.	Turn out and dress.	Turn out and dress.
7.15	Gunnery.	Small-arm drill.	Seamanship.	Gunnery.	Small-arm drill.	—
8.0	Morning evolution and breakfast.	Morning evolution and breakfast.	Morning evolution and breakfast.	Morning evolution and breakfast.	Morning evolution and breakfast.	Breakfast.
8.30	Attend quarters. Clean guns.	Attend quarters. Clean guns.	Attend quarters. Clean guns.	Attend quarters. Clean guns.	Attend quarters. Clean guns.	—

	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9.0	Divisions. Prayers.	Divisions. Prayers.	Divisions. Prayers.	Divisions. Prayers.	Divisions. Prayers.	—
9.15 to 11.30	General exercises aloft.	School.	School.	School.	General Quarters.	Journals.
12.0	Lunch.	Lunch.	Lunch.	Lunch.	Lunch.	Lunch.
1.30	School.	Gunnery.	Seamanship.	Half holiday.	School.	Journals.
4.0	Evening evolution and quarters.	Evening evolution and quarters.	Evening evolution and quarters.	Evening evolution and quarters.	Evening evolution and quarters.	Quarters.
6.0	Dinner.	Dinner.	Dinner.	Dinner.	Dinner.	Dinner.
9.0	Special class in seamanship.	Special class in seamanship.	Special class in seamanship.	Special class in seamanship.	Special class in seamanship.	Special class in seamanship.

EXTRAS.—Boat. Journals. Watch bill, &c., &c.

Speaking from a recent experience of a difficulty which he had mastered, no one in the House of Lords could shake for one instant his masterly condemnation of the attempt to cram youngsters with seamanship, watches, practical gunnery, rifle and cutlass drill, knowledge of routine, discipline, management of men, boat duty, &c., and train them scientifically at one and the same time. See Table 2.

And besides the above category to make them do what he termed "housemaid work," which is after all as necessary as ever in an efficient man-of-war.

We have given a *résumé* of the manner in which we would shape an Officer's career in order that he may become an efficient unit in an organization upon which the fate of this country may at any time depend. We will now endeavour to bring forward in favour of our scheme a small portion of evidence from the abundance which exists.

On the importance of the subject, and the question of the mistake of combining science and practice, Lord Dalhousie and Lord Sudeley were agreed. The latter said: "While so opposed to altering the age of entering, I fully concur with much that my noble friend has said as to the improvements which ought to be effected. . . ."

"As to the four and a-half years man-of-war life, between this preliminary stage ('*Britannia*') and the time when the young Officers went to Greenwich, there was no doubt that there was much force in what had been said as to the little school work done by the Naval Instructor, though the main thing done was that the knowledge acquired in the '*Britannia*' was kept up. The remedy seemed to be to shorten this period, first by the extra year in a sea-going cruiser attached to the '*Britannia*;' and also, by increasing the

"time a Sub-Lieutenant spent at Greenwich from six to twelve months. Naval instruction might in this case be very well dispensed with except in flagships for examination purposes, and the money should be applied to the training ships."

We thus see that these two noble legislators are absolutely agreed with regard to the four years and a-half "*neither one thing nor the other*" which is an attempt at a combination of the scientific and practical elements in the education of Naval Officers, and, from personal evidence gathered from a large area, we believe that the Service is with them on that part of the question.

Professor Main, in his evidence before the Committee on the Higher Education of Naval Officers, 1870, is very strong on this point: "The education a Naval Officer receives after he joins the Service must necessarily be defective! His duty as an Officer must be paramount to every other consideration. After thirty years' experience, he concluded that whatever knowledge it may be necessary for the executive Officers to possess must be acquired by them before they take up their position as Officers of sea-going ships; that his conclusion was borne out by practice in foreign countries, and that ours was the only Navy which attempted education and executive duties combined, which attempt was a signal failure.¹ He enumerated the difficulties with which Naval Instructors had to contend, such as "no place for study, no fixed time, &c. and suggested that no more Naval Instructors should be appointed to sea-going ships or admitted until they cease to be borne in them. Except in the case of flying squadrons, he said that what was learned in book learning was more than counterbalanced by the consequent loss in practical seamanship, and that the Instructors should be seamen, navigators, gunners, &c. The instruction taking place on deck and not in screened berths. In fact that all Officers should be well educated before going to sea. The Sub-Lieutenant's examination to remain; that in seamanship taking place abroad and at home for class." Having regard to the opinions already quoted and to a consensus of opinion gathered from other sources, we base our scheme for "providing an efficient force of Officers for the Navy," on the assumption that it is absolutely necessary to this object that Officers should first receive a thorough and comprehensive education in scholastic acquirements and then proceed to sea, unburdened with this form of study, and devote at least four years, from sixteen to twenty, to mastering the practical detail of their profession, sharpening their intuitive perception and learning the meaning of responsibility. The first three years of this time to be spent in flying squadrons and cruising vessels, in order to be initiated into the mysteries of sailing seamanship, and the last to be devoted to ironclad seamanship and the Naval Instructor.

In the first place, we must consider the question of age and manner of obtaining candidates for entry, and under this head we are in favour of nomination and limited competition for all branches of the Service.

¹ Summary of Evidence Committee, 1870.

We believe in hereditary seamen, and would encourage Naval Officers to send their sons into the profession.

The question of age is at all events primary, and, in our opinion, all-important. The age of entry has not varied more than one year during this century; and, notwithstanding the fact that we are from two to four years in advance of all other nations, we believe that we have that much advantage over them and that the age of from twelve and a-half to thirteen and a-half, taking the circumstances all round, is the best for the boy and for the Service.

We unhesitatingly deny that a boy left at a public school till sixteen and a boy with two years of "Britannia" training are equal, and we are convinced that the balance of general education is in favour of the cadet, without counting the professional grounding which the constant boatwork and associations of a ship must gradually instil.

We would, therefore, advocate the entry of cadets at the present age, and we maintain that though the burden of proof that the existing system is defective clearly rests with those who desire a change, they have as yet brought forward none that has not tended to show the desirability of early entry. If the cry of warning which went forth in the three famous letters of the late Admiral Rous (addressed to the editor of the *Times*, complaining of the decadence of seamanship in the Navy and the ruin to young Officers, as far as practical seamanship is concerned, caused by the introduction of steam) has any real foundation, surely the last resource to remove this calamity would be keeping them on shore two or three years longer and so losing for ever that valuable time, during which they most readily acquire accurate judgment of wind and weather, practical details of boat and ship work in all conditions of the same, become amenable to discipline and learn how to act when forced to assume responsibility.

It is as true as ever that a perfect sailor can only be trained on the sea, and a paradox to say that a seaman can be created or improved by remaining on shore; but we feel bound, in justice to the advocates of later entry, to add that in their hands "a gloss there is to cover that paradox and make it appear to show not altogether "unreasonable."

We would, however, ask them to remember Franklin's statement "Lost time is never found again!"

As regards open competition in other warlike professions, it will be sufficient to quote from the expressed opinion of Sir Cooper Key: "The body of young Naval Officers of the present day will compare favourably with Officers of the line or marines, and the more highly instructed Naval Lieutenants with Officers of the Engineers and Artillery; all of whom are entered over 17 years of age, by open competition. I do not hesitate to say that they might challenge comparison with them on all points, whether in scientific culture or in practical knowledge of their profession.

"I fail to see where the present system fails in producing and "nourishing the qualities which are most required in the Naval

"Officer; and I do see most distinctly how, if the age of entry were postponed till 15 or 16 years of age, many obstacles would be raised to prevent these qualities being formed or nourished.

"Lads of that age from our public schools would be quite unprepared for the rough and uncomfortable life they must experience during their first years at sea.

"It would be very difficult to instil into them that implicit and ready obedience to superiors, habits of subordination and knowledge of the character of seamen, which are necessary to fit a man for command.

"The ways and habits inherent in a seafaring life are acquired only at sea; and can rarely be adopted, except at an early age. Thus the advantages in regard to the professional training of Officers appear to be on the side of *'early entry.'*"

The next question of any importance is College on shore *v.* "Britannia" House or Ship. Upon this subject Professor Soley, U.S.N., who has been at some trouble to obtain accurate data and information as to the system of education which obtains in England, remarks with some truth: "In the English Service there seems to be a theory, that a Naval Officer is a creature of a delicate and sensitive organization, whose regard for his profession and whose zeal for a high standard of professional attainment must be stimulated by surrounding him eternally with all its minor details to an extent not known in any other walk in life.

"To make a sailor, he must begin at twelve or thirteen, even though he does not go to sea for two years, to accustom him early to his duties. During these two years he must live on board a ship and be able to climb the rigging, to familiarize himself with details; though the ship lies at anchor in a river, a few yards from the shore, and carries no spars but the foremast and head booms, he must sleep in a hammock to inure himself to hardship." We are strongly in favour of the ship, which necessitates boat work, running aloft, sleeping in a hammock, and at the same time is close enough to the shore to allow of cricket, football, and all games and exercises in their season.

A finer training, in all respects, than that carried out on board the "Britannia," it is impossible to imagine. So much so, that all that has been found to be said against it is that the standard is so high for passing out, that the absolute hopelessness of reaching it ruins the career of many youngsters; and Professor Soley goes so far as to say, "The system of training in England has a tendency to grasp at the shadow, while losing the substance," and adds that "it seems impossible that the injurious effects of the method pursued with young Officers, during the first eight years of their professional life, should not be felt by the vast majority throughout their whole career."

He also speaks of the discouraging efforts in the "Britannia" to attain a point hopelessly beyond the young student's reach, and winds up his summary of the English system by saying that "he is led to the conclusion that the high scientific and professional attainments

"of many English Naval Officers are not in consequence, but in spite
"of their early training."

We hold that one of the best features of the "Britannia" training is the high standard for the first class certificates on passing out and comparatively low standards of the thirds, coupled with the benefits and advantages which accrue to successful candidates. That a youngster's career is ruined because the "Britannia" standard of passing is too high, is a statement with which we venture to predict few will agree. That many cadets do attain high marks the yearly Returns will show, and it is also worth noting that the boys who do well coming out of the "Britannia" form the main body of the one, one, ones, later on.

Lord Northbrook, in winding up the debate in the House of Lords in May last, stated the case so clearly in favour of retaining the present early entry, and "Britannia," that we cannot do better in order to strengthen our advocacy than quote his words. He said: "It struck him that those who criticized the present system of the entry and education of the Officers of Her Majesty's Navy had omitted to point out in what manner the Officers who had entered, and been trained under the present system, had failed in performing the duties they were put to discharge, or were wanting in those high qualifications which were at present required in consequence of the vast improvements, if so they might be called, or, at all events, the vast alterations in our men of war. None of the noble Lords who had criticized the system had denied that we possessed Officers at present in the Navy who were fit to hold their own in respect of scientific requirements against Officers of the Royal Artillery and Engineers, though the latter entered at a later age by public competition and had received a different class of training. * * * * He would venture to assert that the system which now existed, if capable of improvement, had produced a body of most able scientific Officers, among whom there were those who would compare favourably with the Officers of any other Service in the world. * * * * He might state that the subject had been under the consideration of the Board of Admiralty, which consisted of men peculiarly well qualified to form an opinion upon it, and that all his three Naval colleagues, Sir Cooper Key, Lord John Hay, and Admiral Hoskins, concurred in thinking it undesirable to raise the age of entering into the Service. Other Officers with whom he had communicated had expressed the same views." With this weight of evidence we will leave the question of "later entry" and "Britannia," as having been passed by the mass of the initiated, with a favourable verdict for the present system, improved in detail, into the category of decided issues.

We, however, advocate, as a change in detail, a third year in the "Britannia," devoting the first year to general educational subjects, with what seamanship a cadet would pick up from being away in boats, and in constant contact with models. The second, a third general, a third professional, and a third to detail of seamanship. The third, half to professional study and half to seamanship both

practical and theoretical, boat management under steam and sail, and elementary tactics. Part of the third year might be spent in a cruising sloop of war attached for that purpose in order to teach the practical part of making, taking in and furling sails, tacking and wearing, &c.

The late Capt. Sherard Osborn, R.N., in his evidence before the Committee on Higher Education, 1870, was averse to sea-going training ships and in favour of three years' quiet study and training, away from the contaminating influences of sea-ports and ships when boys are so young, and adds "That if they are taken at the age of twelve years, whether to a college on the sea or not, matters, I think, very little, provided they are in a good healthy locality and if they are kept under good masters and are carefully trained. It is quite enough to pass them into the Navy at the age of 15 as school-boys."

We have, therefore by our proposed scheme, brought them to the age of fifteen and a half to sixteen, having had three years' quiet study at Dartmouth, away from the contaminating influences of a sea port and in a healthy locality, thoroughly grounded in general and professional education.

We now advocate their being sent direct to the cruising ships on all stations, to learn the practical detail of their profession for three years, free from any forced study of a scientific or educational nature, and the whole of their time devoted to duty, seamanship and gunnery instruction.

In support of our advocacy, we must bring to bear the mass of overwhelming evidence in our favour, ably summed up by the Committee of 1870 as follows: "The general bearing of the evidence of the Naval Instructors and other Officers with respect to the efficiency of the instruction on board sea-going ships, joined to the experience that has been gained by the experiments of combined examinations made in the Flying Squadrons and the reports received from the Mediterranean and Channel squadrons of the actual time practically available for instruction, go to establish the fact that the present system is *very imperfect* and does little if anything towards keeping up, still less towards extending, the knowledge of young Naval Officers in *any* subject but those which are absolutely necessary for passing the examinations in navigation at the Royal Naval College.

"In many cases, it appears that not more than six or eight hours weekly, in favourable circumstances, can be spared for the Naval Instructor's work, and even that subject to numerous interruptions which are incidental to a young Officer's life on board ship. In these circumstances, progress in theoretical studies which do not ultimately affect the College examination cannot reasonably be looked for.

"The experience of the Flying Squadron shows that the knowledge of young Officers in everything but navigation is in inverse proportion to the time elapsed since leaving the 'Britannia.'" The Committee then proceed to give their reasons for what they term "the comparative failure." The most important of which for our case is,

"That there is a general incompatibility, on which many of the *most experienced* witnesses (especially Professor Main) strongly insist, "between the position of an Officer and a schoolboy which it is "attempted to combine in the case of midshipmen under our present "system."

The Committee wind up this portion of their report by recommending the abolition of Naval Instructors in sea-going ships in the most emphatic and decided manner. They say that "in these circumstances it becomes a matter of grave consideration whether the "benefit obtained by the service from the employment of Naval "Instructors in sea-going ships is at all commensurate with their cost "to the country.

"The aid of Naval Instructors on board sea-going ships may be "generally dispensed with if the period of residence of the cadets on "board the training ships were extended to four years. They would "prefer to keep them *three* years in the stationary ship, sending them "in the last of those years for cruises during the summer months in "two training brigs especially set apart for that purpose, for practical "instruction in seamanship and navigation, and to retain the present "arrangements as to sea-going training ships.

"They consider that after this extended training it would be "possible to give up *all further instruction* after the young Officers "leave the training ships, and commence active service as *midshipmen* "in the Fleet."

The training ships (sea-going) mentioned by the Committee have ceased to exist, nor would we advocate their re-establishment; we much prefer sending them direct to the cruisers, and for this purpose, and also for the purpose of conveying the three-yearly midshipmen from the cruisers to the ironclads, and also, for purposes with which we shall deal under the head of "providing efficient men," we would propose a circulating ship, which would fill the place of and be to all intents and purposes a training ship, combining training with the system of changes and reliefs, such as our scheme necessitates. We do not advocate going so far as Admiral Jurien de la Gravière in "*La "Marine d'aujourd'hui*," where he says, "*Les stations navales ne sont "pas seulement inutiles, elles sont cruelles. Dans la vie d'un officier, "au cœur de sa jeunesse, elles prennent parfois trois ou quatre années "pour les vouer, sous un climat insalubre, à l'absence. On a proposé "de remplacer la station par la circulation. C'est le vœu général de "la marine, j'y adhère sans réserve.*"

But we do advocate one or two specially built training circulation ships leaving England every six months, and going the rounds, dropping the newly rated midshipmen at their destination and conveying the seniors as stated above. They should be iron ships of the best frigate type, large and roomy, good sailers, with moderate steam power and a light armament.

They should be capable of carrying with comfort from six to seven hundred men and boys and a full complement of Officers, besides the supernumeraries for passage.

They should belong to the flying squadron of eight frigates, proposed

in Chapter III, the ships of which would take this duty in turn, returning to their squadron-work after discharging the Officers and men picked up on their cruise.

Having safely placed our midshipman, thoroughly grounded in general and scientific subjects, on board his cruiser, we would now devote his time entirely to practical seamanship and gunnery, thoroughly impressing it upon him that his very existence depends on his keeping up and improving upon his "Britannia" foundation, and it is this principle of self-education which must be fostered and encouraged in a Service where so much general knowledge is so essential and so much practical fitness so absolutely necessary. We hold that the removal of the Naval Instructor during the seamanship, once the grounding is complete, will prove a positive benefit, and will be the cause of an increase of zeal in self-education, especially as the scheme we propose develops itself, and the Lieutenants of all ships are "qualified College Instructors," and possibly interpreters in at least one language.

Our midshipman would know for certain that he would remain in his ship, or a vessel of her class, for his full three years, when he would be examined in seamanship by the Captain, First and Navigating Lieutenants of his ship, both under weigh "carrying on," and *visà voce* in all the details of a seaman's duty. This would complete his sailing seamanship grounding.

He would all along have been aware that as soon as his three years were up, he must be prepared to meet the Naval Instructor at the commencement of his ironclad year, who would examine him and report "his knowledge of previous study," and then he would set to work to acquire a thorough knowledge of pumps and valves, numbers and places of stations, bulkheads, stowage of flats and store rooms, practical tactics, and in fact generally what may now be termed "iron-clad seamanship." He should then be between the age of nineteen and twenty, when he should be prepared to pass his *provisional* examination for Lieutenant before the Captains and Commanders of his own Fleet. The final examination in all details of seamanship taking place on his return to England, prior to his joining the Royal Naval College at Greenwich.

During his ironclad year, he would also have the great advantage of assisting at competitive squadron exercise, in and out boats, &c., and he would probably be assisted and instructed during the evenings by his Captain every now and then and constantly by the First Lieutenant, who is responsible for his knowledge in that all-important branch of his profession.

We have now passed our midshipman for Sub-Lieutenant and would send him to the College for at least nine months' scientific study and six months' gunnery, until the end of which he should not be eligible for promotion to the rank of Lieutenant. Which promotion could now be made, with war exceptions, entirely dependent on the class of his final certificates.

Before leaving this vital and most important question, we should not be doing justice to our scheme if we omitted to show the agree-

ment that exists in our favour between two such important witnesses as Sir Cooper Key, the Senior Naval Lord, and Lord Dalhousie.

Speaking in the House of Lords on the 6th of May last, Lord Dalhousie said with reference to the present system: "It is about as ill organized and as unprofitable, even from a professional point of view, as can well be conceived. It combines the maximum of hard work with the minimum of opportunity for acquiring professional knowledge and experience. And chiefly for this reason, that a midshipman is expected to do both the duties of an Officer and the lessons of a schoolboy—two things which are absolutely incompatible with each other. He has to lead as it were a double life: and except in those ships where the Naval Instructor is a man of exceptional zeal and ability, or where the Captain of the ship takes a great interest in the midshipmen, only the cleverest and most energetic boys succeed in performing that feat satisfactorily."

He here enumerates a midshipman's duties, and further on he says: "To my mind, no amount of theoretical and mathematical knowledge could make up for any falling off in the ready practical instinct which is supposed to be and ought to be characteristic of a Naval Officer;" and, after quoting various authorities at too great a length to be re-quoted here, he says: "Therefore I say that the attempt to set up a good school on board ship is futile and ought to be discontinued. . . . Whether it be regarded as a means of acquiring practical knowledge of seamanship or as a means of acquiring scientific and theoretical knowledge, I am convinced that these years' sea service, as half Officer and half schoolboy, are eminently unsatisfactory."

In his evidence before the Committee on the Higher Education of Naval Officers, Sir Cooper Key said, "I am inclined to think that if the present system of educating the cadets in the 'Britannia' is carried out, we should require no Naval Instructors at all in our ships of war.

"I would have them in flying squadrons and flag-ships for examinations.

"I think that the years between leaving the training ship and passing for Lieutenant would be better employed if he were trained thoroughly as an Officer and a seaman, giving him to understand that he must keep up his knowledge.

"I think the advantage of that system would more than counterbalance any disadvantage that might result from it."

These are specimens taken from the sayings and writings of many talented writers and speakers on this point, but we venture to hope they are sufficient to prove that the alternative method sketched in Table 2 is an improvement on the attempt to cram scientific and practical seamanship into a youngster at one and the same time. We will conclude with the evidence of our own experience, which was the reverse of what we propose. We commenced in a first class ironclad when we were too young to understand the complicated details of what was then a wonderful ship. We then went to a small craft where we are thankful to say we had a hot grounding in seamanship, but

remained there until the day we went to the "Excellent" and twenty-three days before we passed our final examination at the College, not having seen even the photograph of a Naval Instructor for three years. It is needless to mention the result. Thank Heaven such a case is now impossible.

Having completed his scientific study and gunnery course, which now includes elementary torpedo, and will, we hope, include elementary tactics, we would advocate a Sub-Lieutenant being sent in the same way as the young midshipmen were, as Officers of the watch to cruisers, and subsequently, where possible, to ironclads for their last year; promoting the main body, if they hold good certificates three years after they leave the gunnery school, as passed Sub-Lieutenants; without any reference to the state of the Lieutenant's list for reasons which we will state presently.

As soon as they are promoted they should return to the College to go through a compulsory course of advanced mathematics, study of at least one foreign language, and course of steam tactics.

For this last purpose, we strongly advocate that a tactical establishment be added to Greenwich, and taking into consideration that the Officer recognized as the best existing authority is now in command of the College, we would bring to our assistance the old adage "that there is no time like the present." It is impossible, in a circumscribed essay of this kind, to devote the necessary space required by the overwhelming mass of home and foreign opinion in favour of such an establishment, but we would refer to the writings and sayings of Vice-Admirals Randolph, Sir Houston Stewart, Inglefield, Admiral Sir Henry Codrington, Captains Goodenough, Fremantle, Long, and Noel, Sir Thomas Brassey, and the articles in the public press and literature of the day, "Army and Navy Gazette" of the 21st of February, 1880, the "Nautical Magazine" for July, 1879, "Blackwood's Magazine" of February, 1878, and also to the foreign opinions of Admirals De la Gravière, Comte de Gueydon, Touchard, Bourgois, Boutakov; and of the rising generation, to Lieutenants Penfentenyo of the French, and Semechlin of the Russian Navy, all of whom are unanimous in favour of systematic tactical education as by far the most important item in the training of the Naval Officer of to-day and of the future.

We would commence the elementary tuition as a part of the signal course during the third year in the "Britannia," returning to it in the ironclad year as midshipmen and Sub-Lieutenants, and again improving upon it during compulsory college year as Lieutenant, perfecting in a second year those who took the subject up as their *specialité*, for we are thoroughly convinced that we are as much in want of tactical Lieutenants, Commanders, and Captains as we are of gunnery and torpedo Officers, though we fully recognize their extreme value. The tactical establishment need not be on a large scale. A course of lectures and steam launches would meet the want.

The compulsory year as Lieutenants would complete the educational course which we advocate that every executive Officer should go through. Those with a special line would have a second year as now after their year's ironclad watch-keeping, except those who have selected Navi-

gation, who could not be better employed than as navigators of small craft. Besides the gunnery, torpedo, and Navigator classes we would advocate Lieutenant-Instructors, Tactical-Lieutenants, and for those who found that the vocation of a seaman was unsuited to them, though otherwise of good ability, Lieutenants Paymasters with an increasing scale of rank and pay according to number of years' service, but never, except in case of scarcity of Commanders in war, to command.

In giving this increased number of lines and outlets to the executive Lieutenants we would fill up the list as Sub-Lieutenants became eligible by seniority, being certain that those who did not take up a line, or become prominent as First Lieutenants and organizers, would take the Paymaster or Secretary line, or failing that, from utter hopelessness of advancement, retire.

In support of the suggestion of a "Paymaster line," we would quote the opinion given by Captain Sherard Osborn in answer to the President of the Naval Education Committee: "The only additional remark I would make is that I do not, in the present state of education of Naval Officers, see any reason why there should be a special class called Secretaries to Commanders-in-Chief, and several Officers have asked me a question which I have been unable to answer. They have said, Why cannot Naval Officers do the duty of Paymaster of a ship, as well as Military Officers do the Paymaster's duty of a regiment? I would submit that for the consideration of the Committee." In concluding the Officers' portion, we would only add that the education now open to them is almost boundless, and there only remains, on their part, to bring the lever of application.

TABLE No. 4.

To give an idea of Numbers provided in Peace Time.

EMPLOYMENT, 1879.

Flag Officers in commission..	..	..	..	..	16
Superintendents of dockyards	..	..	..	..	5
Flag Lieutenants and Secretaries to above	..	..	..	..	29
Other persons of their retinue	..	..	..	..	116

ABSTRACT OF EMPLOYMENT.

	Com- mis- sioned Officers.	Subordi- nate Officers.	Warrant Officers.	Petty Officers, Seamen, &c.
For General Service	1,430	263	245	20,562
First Reserve (used as Coast Guard ships) ..	212	12	56	1,981
Gunnery and Training Ships	260	177	144	2,959
Receiving and Depot Ships	587	94	319	3,733
Surveying Vessels	81	..	4	343
Troop Ships	189	5	68	1,974
Store Ships	21	..	5	170
Drill Ships (for the Naval Reserve) ..	28	..	22	235
Coast Guard on shore	93	..	227	3,830
Boys (including 2,400 under training) ..	..	..	..	5,305
Totals	2,901	551	1,090	41,092

THERE ARE OFFICERS EMPLOYED ON

Special Service on shore	89
Unemployed Officers	588
Or a total on the Active List of	5,219
The Reserve and Retired Lists amount to	2,256

CHAPTER II.

Engineers and Engine Room Artificers.

No one who has of late years commanded or been intimately connected with any of our ironclad fleets will deny the importance of the subject of training Engineer Officers, and of the establishment of a body of skilled engine room artificers, to such an extent as to ensure that the numerous and vast engines of our fleet shall be guided with skill, and repaired efficiently and with due economy.

We have conclusive proof of the existence of a unanimous verdict in favour of the importance of this subject, in the report of the Committee appointed by the Lords Commissioners of the Admiralty, to consider "The best means of securing the highest mechanical skill and scientific knowledge in the management of the various engines of Her Majesty's ships of war, and the supply of Engineer Officers and engine room artificers, for Her Majesty's Navy." We so entirely concur in what they state in paragraph (5) that we will adopt their words.

"No arguments are needed to prove that the efficiency of our fleets, on which the strength and security of this country must ever depend, is becoming daily more intimately connected with the care and management of the steam machinery in ships of war. The power of that machinery has increased in amount since the year 1855, from 155,000 indicated horse power, to 458,000 indicated horse power in 1875. This represents the motive power only of the ships of the fleet, in addition to which the ironclads and other large vessels of the present day carry numerous engines for duties which, in former days, were performed entirely by manual labour. Indeed, a ship with her powerful engines for propulsion, elaborate machinery for the steering gear and capstans, her guns and gun carriages, and all her interior fittings connected with the various compartments, pumps, pipes, and valves, forms one large and complicated machine. The source from which Officers of that branch of the Service are obtained who will, under the Officer in command of the ship, be responsible for the care and management of the steam machinery, the mode of training them in a knowledge of their duties, and the positions they will occupy in the fleet, are subjects worthy of much consideration."

We would here state that the only two lines that should not be incorporated with the Executive are the Engineers and Constructors,

who, as at present, should start and work together to the end of their college career, and be interchangeable according to the inclinations and talents of the individuals.

TABLE No. 5.

SCHEME FOR TRAINING ENGINEER OFFICERS.

Training.	Length of Time.	Age.
Entry by nomination and limited competition	..	13 to 14.
Training Ship or College, and practical work in dockyards and vessels of the Reserve ..	} six years ..	13½ to 19½.
Greenwich College	one course ..	19½ to 21.
Selected students	two courses ..	21 to 23.
Drafted to sea, main }	second course ..	} 25 to 35.
body optional }	nine months ..	

The six years' practical training at the Dockyards in the Factory workshops and the instruction in iron ship-building necessitate the early entry of Engineer students, for even the present entry, from 14 to 15, ensures their being 22, and sometimes 23 before they are eligible to go afloat as Assistant Engineers.

Nearly all the witnesses examined by the Committee in 1875 bore decided testimony to a defect in the system of obtaining Engineer students; namely, that notwithstanding the high education to be given, and the position in which Engineer Officers will be placed on board ship as commissioned Officers, a large portion of the candidates for entry as Engineer students are sons of artificers of various grades in the Dockyards, of seamen and marines, or of others belonging to the same class of society.

We would advocate that this large portion should form the nucleus of a corps of engine room artificers trained in our own Dockyards and factories; and that the entry of Engineer students should be entirely by "limited competition," the nominations being in the gift of the Lords Commissioners of the Admiralty, Commanders-in-Chief, Admirals Superintendent of Dockyards, Captains of the steam reserve, and employed Inspectors of machinery.

The moment that nomination and limited competition render this branch more select, a far better class of applicants will follow, and we feel confident in greater numbers.

We have it in evidence and from our own experience, that no one is more anxious to raise the standard of their social recruiting than the Engineers themselves. Take for instance the evidence of Mr. A. H. Symes, Engineer, before the Committee in answer to questions 5606-5607. "Thinks Engineer students should be nominated and "selected by competition; position should not be thrown open to "public competition: . . . 5604-5605—Engineers' mess should be "abolished, but does not see how it could be done at once; considers

"education of Engineer Officers entering ought to admit of any society; knows at the same time there are drawbacks to their introduction into gun room or ward room messes." He is followed by Mr. James Melrose, who says on the same subject that "he should like to see Engineers' mess abolished and Engineers made members of the ward room after 5 years' service, but it would hardly be judicious to abolish mess until better class entered as Engineer students." These extracts are taken at random from a number, all of which agree on this point; and it is clear the Committee were satisfied with the importance of a higher social standard, as they state in paragraph 10 of their report :—

"As it is undoubtedly desirable that Officers should be highly educated to perform the duties of Naval Engineers, and hold the rank of Commissioned Officers, it is equally desirable that they should be in all respects fitted to take their place with Officers of the corresponding rank in ward room and gun room messes." We will conclude the evidence on this point by referring to an independent witness, Mr. John Besly, secretary to the Admiral Superintendent at Devonport, who has had experience in the entry of Engineer students. He says he "should prefer to see nomination, looking at class of candidates; thinks, as it is at present, it is a bar to young men of respectable parentage coming forward; might be limited to sons of Civil Officers and of gentlemen with limited incomes; would not object if a millionaire liked to put his son in; has known men who, hearing who students were, said they should not think of putting their sons in; half pay Officers also after hearing nature of appointment have given up doing so."

It is upon the consensus of professional, backed by independent opinion, that we base our advocacy of limited competition, and we agree with the Committee as to the necessity for the parents defraying part of the expense of the Engineer students, and also that the improvements in the prospects of the engineering branch of the Navy should be made generally known throughout the country. The rise in social status would go far to place an insurmountable barrier between the executive Engineer of the future and the rising engine room artificer, whatever may be his eventual place in the interior economy of a man-of-war.

Once having established a higher class of entry, a college or training ship, and the certainty that the students will be treated as young gentlemen," we would advocate that they should be more thoroughly than ever impressed with the importance of their practical training and ability to "perform a job" themselves if need be, no matter how intricate. Those who displayed no ingenuity, inclination, or energy in this direction should be reported upon as soon as possible, in order that they might be removed to a more congenial sphere.

The very fact that there is some idea of reducing the number of Engineers in large ironclads and other vessels and filling their places with engine room artificers, chief engine room artificers, and Warrant Engineers, makes it all the more necessary that those who remain

should be passed masters in practical work. The place which "skill" as workmen holds in the minds of the authorities, is shown by the fact that two prizes are given annually in each dockyard to the student who shows the greatest skill as a workman, and students have to get fifty per cent. of the maximum marks in this branch in order to pass.

This practical course complete, the admirably arranged training courses in scientific knowledge are perfectly adapted to render efficient the force of Engineer "Officers already provided for Her Majesty's Navy." The compulsory year for all and final examination with time for class gives a very high standard of efficiency to the main body, while the permission granted to the two Assistant Engineers chosen annually to complete two further and still more advanced courses, gives to the country a few Officers in this corps of the highest scientific attainments, capable of filling, with credit to themselves and benefit to the country, any appointment which is likely to occur in their department, this century.

Believing that the main point with reference to the Engineer Officers is the rise in the social status of the students entered in the future, and that their subsequent training as at present administered leaves nothing to be desired, we will now venture to advocate a scheme for the entry and training of engine room artificers from boy upwards in our own dockyards, supplementing this main body with a certain number from the leading merchant yards, in the same manner as the supplementary Engineers are obtained.

TABLE No. 6.

SCHEME FOR TRAINING ENGINE ROOM ARTIFICERS.

Training.	Length of Time.	Age.
Entry by general open competition .. ..	..	12½ to 13½.
One year without pay on trial	one year ..	13 to 14.
Practical and dockyard school at 7s. a week ..	two years ..	14 to 16.
Practical and dockyard school, engine-fitting, boiler making, at 10s. a week.	} three years ..	16 to 19.
Working on board vessels in the Reserves, practical repairing, knowledge of steam, &c.		
Drafted to ships in commission, and selections for harbour appointments.	two years ..	19 to 21.
	} twenty-one years	21 to 42.

To rank with and wear same uniform as Seamen Schoolmaster and Master-at-arms.

Pension according to scale for conduct, maximum 50l.

Our reasons for advocating this scheme are, first, a strong belief in the principle of training your own Officers and men in all grades backed up by a flow from outside, and pensioners, in the event of sudden emergency; secondly, the strongly expressed opinion of a large number of the witnesses examined by the Committee of 1876, as

to the unsatisfactory state of the present system; and, thirdly, the discontent expressed by the artificers themselves, mainly upon points of discipline, cleaning their mess place, lashing up their hammocks, &c., all due from having entered late in life. It will be observed by a close study of the evidence that they appear to be more comfortable in their second ship than in their first, but the same may be said of all classes in a man-of-war, and is merely the effect of custom. The various trades required are those of engine fitter, boiler maker, engine smith, and a few as copper smiths, or pattern makers, and the age at which it is thought desirable they should be trained, and fit to go to sea, is 21. The present age of entry is from 21 to 30, so that those entering near the latter date would be nearly 50 before they would become entitled to a pension. The Committee of 1876, in their report, stated that they found "the engine room artificers already entered " are considered to be fair average workmen, capable not only of conducting repairs in their respective trades with celerity and efficiency, " but of soon learning to assist each other in every description of " work; also well qualified to take charge of a watch in the stokehole, " and, after a few years' experience, to keep watch in the engine room " of small ships under the supervision of the Engineer in charge.

" We have, however, learnt from various sources that they do not feel " that they are treated when afloat in such a manner as to make them " reconciled to a sea life, or to encourage others to join the Service."

We would advance, that this very feeling is the strongest reason for bringing them up ourselves from boyhood, and we have further proof in the remarks made by the Committee in paragraph 86: " Engine " room artificers who have served their time as fitters or boiler " makers, and have thus placed themselves in a certain position of " independence, join the Naval Service at an age of between 20 and " 30, having already contracted the habits of their class on shore; " they have been accustomed to regular limited hours of work, to pass " their Sundays at home, and on returning from their daily work to " find their meals ready, their house cleaned for them, and themselves " relieved from all other supervision and work, than that of their " trade. On board a ship of war they find themselves surrounded by " men who have been brought up to a different system from boyhood, " and who cannot therefore understand that the habits of their own " ordinary course of life may prove a hardship to others who for many " years have been accustomed to an entirely different mode of living."

Here again we see that the whole difficulty arises from a change of habit late in life, caused by their being trained in private firms and joining the Navy in driblets at various ages from 20 to 30. We will now show that the evidence given by themselves as a body is entirely in favour of the absolute necessity of training our own men for this branch of the Service.

In the summer of this year, it was noticed by one of the Service Journals that the "Engine room artificers of the Navy" had prepared a statement of what they considered to be the grievances under which they labour with regard to their pay and position, somewhat as follows: "They urge that they are a class of mechanics *privately*

“trained in their respective trades, at their own expense on shore, and when fully qualified as workmen, entered to execute the skilled mechanical work in the engine and boiler rooms of ships of war, in addition to which they have to perform similar duties to that of junior engineers, such as keeping watch in either boiler or engine room. They state that they are of precisely the same qualifications, as to education and ability, as the majority of Engineers who so ably perform similar kind of work in the Mercantile Navy, whilst the treatment they receive on board of a man-of-war with regard to position, pay, mess, wash place and other accommodation, is of a far different and inferior nature to that received by their class in private employ. They were introduced into the Navy as an experiment by an Admiralty Order, dated March, 1868, and have so far proved a success as to cause the Lords of the Admiralty under different Administrations to permanently perpetuate that class in the Naval Service of the country and largely increase their numbers, with a corresponding decrease in that of junior engineers, engine room artificers being now sent to ships instead of those Officers to do exactly the same work. They urge an increase of pay, progressive up to nine shillings a day counting charge money, and that they should rank with but after Warrant Officers, and wear the uniform of such”; and a great deal more which it is as impossible to grant them, as it is to give them more space in this essay, simply because we have not got it; and, “because they are trained to combine,” can be no reason for their taking away space which belongs to all; we therefore strongly advocate training our own main body of artificers, availing ourselves of the services of those that are privately trained in an emergency at their market value.

TABLE NO. 7.

PRESENT AND PROPOSED COMPLEMENTS OF ENGINE OFFICERS AND ENGINE ROOM ARTIFICERS FOR ALL SHIPS.

Description of Ships.	Present Complement.			Proposed Complement.		
	Chief Engineers.	Engineers and Assistant Engineers.	Engine Room Artificers.	Chief Engineers.	Engineers and Assistant Engineers.	Engine Room Artificers.
21. Twin-screw ironclads	19	124	92	21	102	112
31. Single-screw ironclads	29	168	70	31	110	131
24. Ships of the line and frigates ..	24	113	49	24	75	95
28. Corvettes	28	84	43	28	44	84
31. Sloops	11	71	41	27	34	65
57. Twin-screw gunboats .. ..	..	121	61	34	57	91
37. Single-screw gunboats .. ..	..	77	34	..	71	43
24. Troop ships, store ships, &c. ..	22	102	32	24	55	85
11. Tenders .. ..	..	16	8	..	13	18
Reserves and dockyards	43	176	60	43	133	111
Total	176	1,052	490	232	694	835

CHAPTER III.

On Providing Efficient Seamen.

WE have stated in the introduction with what importance we look upon the question of "Manning the Navy," and any one who has thoroughly studied this question, and mastered the details of the changes that have taken place since the recommendations of the "Continuous Service Committee," appointed in 1852, will realize the important place it has held in the minds of successive Governments of all shades of politics, and will have observed the unanimous verdict given by critics of all classes of the paramount importance of the *personnel* over the *matériel*.

Rear-Admiral Rogers, U.S.N., in a letter from London says, "There is nothing in naval matters so important as the subject of manning. "Fleets may be easily built, hosts of swift steamers may be quickly taken from commerce, and converted into tolerably efficient cruisers, but an *efficient* man-of-war's-man cannot be improvised. Such hearts of oak are of slow growth and need much care" . . . and later on the Admiral commends our system of dealing with this question in the strongest terms. He says, "You have met the difficulty manfully in your training-ships, your gunnery-ships, and your system of continuous service. There is no body of men in the world to-day comparable with your continuous service men. I wish with all my heart that my countrymen would follow your example."

This strongly expressed opinion is backed up by Lieutenant Commander Chadwick, U.S.N., who has certainly taken pains enough to obtain information whereon to base a sound opinion.

After making a comparison between soldiers and sailors, with which this essay has no concern, he says, "The sailor has been made a man of high respectability, instead of the drunken, careless fellow of some years since. The men who man her ships are a body of whom England is justly proud. There is no town in England so distant from the sea, but that the man-of-war's-man is often seen and always in uniform, which he wears as if he respected it." These straightforward commendations are, to say the least of it, reassuring. Periodical disasters, such as the capsizing of the "Eurydice" and the loss of the "Atalanta," call the attention of the public and the press to the training of our young seamen; and article after article from the pens of our most able journalists paint the horrors of the existing system of training and the decadence of seamanship in the Navy, and the various advocates for "this" and "that" improvement have a field day in the Morning and Service Papers. A week or two at the most, and this storm in a tea cup subsides, leaving the "training coach" of the greatest maritime Power in the world very much where it was.

Believing as we do that the basis of our present training system is sound, we shall endeavour to point out where we think improvements may be made in existing details, and collect and concentrate the

mass of private and public opinion which has come under our notice.

The first question to be dealt with is "What kind of men do we really want as the 'main body' of the Navy?" Supposing a good fairy were to come to us and tell us to wish; would we wish for the perfect seaman of the old type? Would we wish for a grog-drinking, leave-breaking, tobacco-chewing, old salt, ignorant of how to write his own name and only kept in tolerable order by the sight and feel of the cat? Would we wish for the sweepings of the jails, and for those clever enough to escape conviction who were tempted by a bounty probably spent in drink before it was accepted? Or, would we prefer the well-bred, and well-fed country lad, from the upper school of the training-ship, as smart a man as ever had been on the upper yards, and yet not too good to spend his watch below in study; not without his faults and their punishment as a young ordinary seaman, but rarely to be found as a defaulter when once rated A.B.

There can be but one answer to this question. We would choose the trained man of to-day above all others.

A remarkable increase in the knowledge of our seamen has taken place during the last few years, and as we are in a tentative stage, we may hope that naval education, as carried out in our training ships, is capable of further development. We would, therefore, submit that what is wanted for the Navy is a class of elementarily educated, active lads, capable of performing all a seaman's duties aloft and on deck, and with sufficient schooling and exercise of brain to enable them to cope with, and successfully master, the changes and improvements in the system of naval warfare, such as the gun, ram, and torpedo of to-day, or the sub-aqueous, aerial, and other systems which are yet to be invented.

We will now consider the question of recruiting and entry. To get at the gist of what is now existing, we must again employ the medium of the past. As long ago as 1794 a great reform took place in the entry of boys for the Navy by Order in Council, and the numerous servants on ship's books were replaced by ship's boys, a portion of which worked with the ship's company, and the remainder attended on the Lieutenants and other Officers; subsequently a further reform was made by abolishing the custom of keeping "widow's men" on the books.

Prior to 1853, the practice during peace was to enter volunteers for particular ships nominally for five years, but practically for the period during which the ship remained in commission, averaging three to four years. This system was attended with the greatest inconvenience to the public service, and even to the seamen themselves. Men who had been trained at great trouble and expense and had been brought to a state of the highest efficiency were suddenly dismissed, and being unable to obtain re-admission to the Service, often sought employment under a foreign flag, and thus, when required for the service of the country, were not to be procured. This led not only to great delay in conducting the ordinary duties of the Service, but was a source of serious

embarrassment when political questions rendered necessary the speedy equipment of a fleet. The "continuous system" was introduced to obviate such dismissal, by the recommendation of the Committee on Manning the Navy, 1852, and from their report came the present training system. They observed that it was chiefly to the boys that they must look for the gradual organization of a permanent Navy. They stated that by official Returns it appeared that during the preceding twelve years upwards of 2,000 boys had been on the average annually entered, a number which would go far on the usual peace establishments of the Navy for that period, to replace the vacancies caused by deaths, discharges, &c. In dealing with this part of the question the Commission of 1859 say: "At the present time, however, only about 500 of those who annually enter the Navy have the advantage of passing through the training vessels; and so sensible are we of the advantages of early training that we recommend that a large ship similar to the 'Britannia,' at Portsmouth, and capable of affording accommodation to 500 boys, should be placed at Plymouth, and that four additional training vessels should be provided, which would enable the whole of the boys required for the Navy to receive the same instruction. This would cost about 16,000*l.* per annum."

We will now endeavour to investigate the result of these excellent recommendations which were the outcome of evidence collected from all grades with great care and labour.

The present training system consists of the entry of boys, at the age of from 15 to 16½, on board five line of battle ships, stationed at Portsmouth, Plymouth, Portland, and Falmouth.

They are obtained as volunteers, by a system of Oppidan recruiting principally conducted by the Marine recruiting parties stationed in our large towns; the Officers in charge and the sergeants being remunerated for every boy who succeeds in passing the final examination on board the training-ship to which he is forwarded. Their height averages from 5 feet to 5 feet 2½ according to age; and measurement round the chest, from 30 inches to 31½ inches.

In this manner the main body of the Navy may be said to be entered with a small contingent from Greenwich Hospital School, and a few, not always satisfactory, entries from Mercantile training ships.

As soon as it has been decided to enter a boy, he is taken on board the "Circe," and from that moment he ceases to exist as an individual and becomes a member of the finest profession, both morally and physically, in the world.

The transformation is rapid, and effective; it commences with a crop and good scrubbing, repeated daily for a week, at the end of which period the boy finds himself clean and well dressed, with a good kit, standing on the deck of the parent ship to be detailed as a unit in perhaps the most perfect organization that exists.

From that moment his training begins, and he comes into constant intercourse with the Instructors and schoolmasters, receiving daily care and instruction until he is passed, at the varying age of from 20 to 25, as an able seaman and trained man.

It matters little to which of the five training ships a boy is attached as they are under one head, the Captain of the "Impregnable," who directs and is responsible for all; and recently attention has been called to slight differences in detail and routine which existed causing the issue of a detailed general scheme of routine for all.

Boys once entered are bound to serve ten years from the age of 18, with the option of serving another 11 years in order to obtain a pension graduated on a scale, the amount depending entirely on "conduct during service."

The great division in the training ships between intelligent and stupid boys, is the "upper" and "lower" school and the stigma of having failed to get out of the lower school, follows a boy for years after he has been drafted to sea. Thus the examination which bridges this gulf is of some importance, as are also the details of instruction, which need scarcely be further described here.

The school is divided into sections of 20 to 25 each, each section being under one schoolmaster or pupil teacher.

The method of teaching is that in which all the pupils of one section are given the same example, piece of dictation, or words to spell, as the case may be, at the same time. As each one finishes, his slate is handed to the Instructor for marking.

That the method is good is shown by the results. Lieutenant-Commander Chadwick was especially struck with the spelling and writing.

Like every other walk in life, at this time, examinations form the most important feature of the system of education. It is easy to realize this when one thinks what a short time a year is, and consider what a mental strain it must put upon a boy's faculties to be examined most thoroughly in the schools, seamanship, and gunnery, in March, June, September, and December.

No wonder it has been remarked by an English Naval Officer of high standing, that "the English sailor must know now much more than the average Lieutenant of 30 or 40 years since." We endorse this statement, and thoroughly believe it to be within the mark.

The practical training in seamanship is carried out under especially picked and qualified Instructors, principally by oral teaching, from cards and by models.

TABLE No. 8. OF INSTRUCTIONS.

First Section.

- To be able to sling a hammock, plaiting up the ends of the nettles.
- To hang a hammock up, secure the laniard properly.
- To lash a hammock up and know the number of turns to take with the lashing, except for night quarters, or if the fire bell should ring.
- To stop a hammock or a piece of clothes on a girt-line.
- To fold up each piece of clothes for stowing in a bag, and to lay out a whole kit for inspection.
- To put in clothes stops, and becket, the ends back in jumpers, &c.
- To fold up bed, blanket, and bed-cover for inspection.
- To hold a clean hammock for inspection.
- To scrub a hammock and wash clothes.
- To mark cloths and bedding.

Parts of the Ship.

To learn the names of, and be able to point out, the following:—

Upper deck.	Starboard side.	False keel.
Main deck.	Port side.	Main "
Middle deck.	Midships.	Keelson.
Lower deck.	Gangways.	Billboard.
Orlop deck.	Bow.	Gripe.
Quarter deck.	Stern.	Bruds.
Forecastle.	Stem.	Counter.
Waist.	Quarter.	Bulwarks.
Poop.	Cutwater.	Waterworks.
Hold.	Figure head.	Hammock nettings.
Under the half deck.	Knight heads.	Bilges.
Davits.	Cut heads.	

Ship's Fittings.

Hawse holes.	Spider.	Cartlings.
Chain pipes.	Goose neck.	Cant pieces.
Bitts.	Fife-rail.	Bulkhead.
Compressor.	Belaying pins.	Ring bolt.
Capstan.	Cleats.	Eye "
Hatchways.	Fish davit.	Port sill.
Gratings.	Bumpkin.	Quarter gallery.
Combings.	Chains or Channels.	Hammock cloth.
Scuttles.	Chain plates.	Stern walk.
Scuppers.	Stanchions.	Monkey chains.
Manger.	Shelf piece.	Companion ladder.
Bucklers.	Knees.	Accommodation ladder.
Bollards.		

Masts and Yards.

Lower masts.	Fishes.	Fid hole.
Top masts.	Cross trees.	Sheeve hole.
Top-gallant and royal masts.	Top.	Fid.
Trysail masts.	Top rim.	Preventor fid.
Bowsprit.	Sleepers.	Lower yards.
Jib-boom.	Cap.	Top-sail yards.
Flying jib-boom.	Capshore.	Top-gallant yards.
Dolphin-striker.	Wedges.	Royal yards.
Sprit sail-gaff or whisker-gaff.	Mast head battons.	Studding sail yard.
Spanker-gaff.	Bed of the bowsprit.	Slings of a yard.
Trysail-gaff.	Bees "	Quarters.
Studding sail.	Saddle of the jib-boom.	Yard arms.
Spanker-boom.	" of the spanker-boom.	Boom iron.
Housing.	Jaws (of a boom or gaff).	Clamping or inner boom iron.
Hounding.	Lightning conductor.	Snatches for top-gallant.
Mast head.	Bolsters.	Sheet.
Cheeks.	Rubbing-paunch.	Fishes.
Hounds.	Heel of mast.	Tye-bands.
Trestle trees.	Head "	

Standing Rigging.

Stays.	Mast head pendants.	Flemish horse.
Shrouds.	Burton pendants.	Parrel.
Backstays.	Ratlines.	Trusses.
Bobstays.	Back ropes.	Slings of yard.
Bowsprit shrouds.	Jumpers.	Necklace (on lower mast).
Guys.	After jib guy.	" (on top mast-head).
Martingale.	Heel chain.	Top-gallant rigging falls.
Gammoning.	Crupper chain.	Sheer pole.
Collars (on bowsprit).	Jack stays.	After swifter.
Futtock shrouds.	Footrope.	Catch ratline.
Laniards (of rigging).	Stirrups.	

Sails.

Courses.	Foot.	Reef bands.
Top-sails.	Clew.	Belly " "
Top-gallant sails.	Tack.	Top lining.
Royals.	Sheets.	Goring cloth.
Flying jib.	Bunt.	Roach.
Foretopmast stay-sail.	Cringles.	Mast-lining.
Stay sails.	Robands.	Slab.
Spanker.	Head-earrings.	Bunt-becket.
Gaff topsail.	Reef " "	Marline on foot.
Lower studding sail.	Eylet holes.	Fore side of a sail.
Fore top-mast " "	Tabling.	After " " "
Top-gallant " "	Bowline bridle.	Port side of a fore and aft sail.
Cloth.	Buntline toggles.	Starboard side of a fore and aft sail.
Head.	Reef tackle patch.	Bolt rope.
Leech.	" " pendant.	
Luff.	Buntline cloth.	

To work on the monkey topsail-yard as follows :—

To loose.	To unbend.	To reef.
To furl.	To bend.	To shake out reefs.

The gunnery instruction is carried out by Instructors from the "Excellent" and "Cambridge," and is very complete.

TABLE NO. 9.

DETAIL OF INSTRUCTION IN SMALL ARMS.

From First to Fifth Days.

From 9 to 10.30 a.m.—manual of arms.
 From 10.40 to 11.30 a.m.—field exercise.
 From 1 to 2 p.m.—field exercise.
 From 2 to 3.10 p.m.—manual of arms.

From Sixth to Ninth Days.

From 9 to 9.30 a.m.—position drill.
 From 9.50 to 10.30 a.m.—aiming drill.
 From 10.40 to 11.30 a.m.—field exercise.
 From 1 to 1.30 p.m.—position drill.
 From 1.30 to 2 p.m.—aiming drill.
 From 2.5 to 3.10 p.m.—position drill.

Tenth Day.

a.m., as for "sixth to ninth ;" p.m.—blank firing.

From Eleventh to Fifteenth Days.

a.m., as for "sixth to ninth."

p.m.—ball practice.

Musketry instruction.

From Sixteenth to Eighteenth Days.

a.m., as for "first to fifth."

p.m.—pistol drill and firing.

Nineteenth Day.

Examination.

Twentieth Day.

a.m.—examination; p.m.—manual quarters.

TABLE NO. 10.

H.M.S. "IMPREGNABLE."

Weekly Seamanship Report.

Instruction.	Section.	Subject.	No. in Section.	No. passed out during the week.	No. over one month in Section.	Instructors.
First.	1st.					
First ..	1st	Laying out kits, slinging and stopping on hammocks, lashing up hammocks, parts of the ship				
	2nd	Names of masts, yards and sails, and standing rigging, monkey topsail				
	3rd	Pulling, parts of boat, &c. ..				
Second..	1st	Bends and hitches				
	2nd	Compass				
	3rd	Lead and line, heaving the line ..				
Third ..	1st	Knotting and splicing worm, parcel and sieve seizings and whippings, description of blocks, ropes, &c.				
	2nd	Compass and steering, sea terms, rule of road				
	3rd	Reeving running gear, shifting sails				
Fourth..	1st	Mat and sennit making, fitting rigging				
	2nd	Anchors and cables				
	3rd	Use of purchases, setting up rigging, fitting out, and stripping ship				
Extra ..		Sailing launch				
		Sail making				
		Signals				
		Colomb's lights				
		Piping				
		Tailoring				

Number of hours during the week at classes.

Number of hours during the week at sail drill.

Number of times boats away for general exercise.

_____, Boatswain.
_____, Lieutenant.

The Committee on Training Ships of 1879 recommended the reduction of the ten weeks on board the gunnery ship to five, in order to make it certain that all will be able to go through in the time.

The special lines, which are omitted from the general body, are the signal staff, carpenters, band and bugler boys.

The signal boys are chosen from the upper school when about half through their time. They are volunteers, and are put through a rigorous course of instruction. Before being rated signal boys, they must pass through the first three instructions. Until they are rated third class signalmen in a sea-going ship, their seamanship instruction is continued.

About fifty boys are also allowed to volunteer as carpenter boys and go through a course of training on board the "Circe." This is the longest course and lasts over two years. At 16 they are rated carpenter boys first class, if qualified, and at 18 they are rated second class carpenters and sent to the dockyards to complete their training.

The band has scarcely a place in this essay, but we would remark that since bandsmen have become part and parcel of the "continuous service system," there has been a marked improvement in their conduct and discipline.

Bugler boys form an important feature in the organization of all vessels of war, but they are trained as seamen, and fill the successive ranks in a ship in their turn, except on an emergency, dropping their bugling altogether.

All boys are taught to swim and the main body to row and handle a boat under sail. At the expiration of their year's elementary training on board the parent ship, all boys go through a course of two months or more on board one of the five brigs which are attached for that purpose. This course is most thorough for the time, embracing all the practical details of a seaman's duty.

This course completed, the boys are considered ready for drafting to sea-going ships, where they come under the special care of the first or other Lieutenant detailed for that duty, assisted by a ship's corporal and one or more petty officer instructors as necessary.

They are constantly exercised aloft, and at oral instruction during their watch on deck, and by the schoolmaster in their watch below. We have generally found that, with very few exceptions, they are fit to be rated first class ordinary seamen at the age of 18. Should they prove not so, the circumstances have to be reported to the Admiralty.

The ordinary seaman still remains in a state of instruction as regards seamanship and gunnery, but his compulsory schooling ceases. In most ships, shortly after being rated, ordinary seamen are placed in the gunnery training class, which interferes with their seamanship, but as soon as they become trained men they are put through a thorough course, in the hope of rendering them eligible for able seaman's rate before the age of 21.

Such is a short *résumé* of a boy's training in Her Majesty's Navy; and a close study of the details, far from forcing upon us the necessity of making suggestions, has caused us to join in the admiration which

has been so often and loudly expressed for the most admirably conducted system of elementary and professional education in existence. "The British Navy," says the Secretary of the United States Navy, in his report, "has the reputation of being unsurpassed in its *personnel*, "and it has acquired this distinction mainly by means of its training "system."

Having determined, after considerable study, that the present system gives us the best means of providing "an efficient force of men "for the Navy," we now propose to make a few remarks on the changes in detail which are constantly suggested to meet the requirements of the ever changing times in which we live. The age at which boys are entered for the Royal Navy was settled by the Parliamentary Commission of 1859. After taking exhaustive evidence the mass of authentic opinion collected in their report shows that, taking the expense into consideration, the age of from 15 to 16 gives the best results for expenditure. It is also clearly demonstrated that, putting the expense on one side, that entry between 14 and 15 with a second year's training would more than double the standard of education.

We hope in the course of time, when the standard of a seaman's education attains a higher value, that funds may be forthcoming to make this very desirable change.

In this thickly populated country the question of "Oppidan *versus* "rural recruiting" (or, as has been frequently discussed, "how to combine the two"), cannot be robbed of its importance.

The latest information we have on this subject is from the report of the Committee "on the regulations for the entry and training of "boys in Her Majesty's Navy, December, 1879." They state in paragraph (3) that "The returns show that, with very few exceptions, the "boys are recruited from towns, and there is an apparently well "grounded opinion that our boys are not obtained from a sufficiently "extended recruiting area. Marine recruiting parties are the only "authorized agency for raising boys in the inland counties, and as "their centres are necessarily large towns, they do not enter many "country lads. Admitting that the raw material for our Navy would "be much improved by a far greater admixture of country lads, "the question is how to obtain them. The only practical suggestion "we can offer is in the direction of making the advantages of the "Service better known in country places through the Magistrates, "Clergy, Boards of Guardians, and School Boards; handbills might "be forwarded to the Chairmen of these different Boards in rural "districts, with a request that they should be hung conspicuously in the "board-rooms and other places."

We would supplement these most excellent suggestions by proposing that an arrangement should be entered into with the masters of all Government and village schools, in order that they might publish to the boys and their parents the advantages reaped by those who enter the Royal Navy. And besides this a portion of the reserve pensioners (which we shall deal with in their proper turn) should be quartered throughout the length and breadth of the land, in order to demon-

strate to the lads, and to their parents, to what position they might attain, and to keep up in our country villages those traditions which have ever been the secret of our maritime power.

Every one who has experience of boys and ordinary seamen in the Navy will probably remember a case, or cases, where a boy's idea of his own age and that placed on his certificate did not agree.

It appears that sufficient reliance cannot be placed on the "declaration before a magistrate" though it is the form which is nearly always produced. We would advocate that as it is known not to be sufficient evidence of a boy's age, it should cease to be considered so.

The Committee of 1879 notice this point in their report and suggest a remedy which seems to us to meet the requirements of the case. They say, "Among the documents required at entry, we are of opinion that too much stress cannot be laid upon the registrar's certificate of birth; many boys have entered considerably over age, and thus stunted men instead of growing lads have been brought into the Navy. The bonus given to recruiting parties is a temptation to them to induce boys to make mis-statements. . . . The legal fee for a registrar's certificate, namely 3s. 7d., is practically prohibitory. We lay such stress on the importance of having this certificate that we would submit that the arrangement by which 6d. only is charged for a registrar's certificate of birth issued in connection with the Elementary Act of 1876 (New Code 1880, page 40), for the employment of children of under 14 years of age, should be extended to candidates for entry into the Royal Navy. We should accept also the copy of the register, obtainable under this Act from the clerk of a local authority, for which the sum of 4d. is charged." Whether these excellent suggestions can and will be carried out remains to be proved, but we maintain that it is important "in providing efficient men for the Navy," to check, by all means in our power, false entry; also improper entry, and the entry of ignorant boys such as those who can barely come up to the very low standard of knowledge at present necessary. It is suggested as a check to improper entry, that a certificate should be produced appended to the parent's consent paper to be signed by the clergyman of the parish or a resident householder.

The responsibility of sending mentally unsuitable boys for entry rests with the Officer in charge of the recruiting or coastguard station from which the boy is procured. There is no doubt that many ignorant boys have been sent to the training ships from the recruiting stations, and that, as the Committee remark, "They have much impeded the training ships in their proper work. The boys remain the whole of their time in the lower school instead of joining in or rapidly advancing to the upper school, when much more time is devoted to other subjects."

If it were found possible to substitute any manner of entering boys but that of paying recruiting sergeants and others, so much a head, we believe that this blot would be removed.

It has been advanced that too much is attempted to be taught in

seamanship, and that consequently the boys leave the training ship with a superficial knowledge without being grounded in the more elementary parts of their work.

No one can deny that a great deal is attempted, but it is conclusively proved by the results that a great deal is accomplished. It must be remembered that seamanship is nothing but one gigantic grounding, and that the only part which can be taught without actual contact with the wind and sea, is the rigging and fitting out of a ship; knotting and splicing, sail making and fitting, the compass and lead, and the art of pulling an oar, and managing a boat under sail—all these are attempted, as shown by Table 8. Each section has its own card, and is part of an instruction; a boy is *never* passed out of an instruction until he has learned all the subjects of that instruction. Thus we see that everything that is attempted is thoroughly mastered as far as a moderately educated boy of that age can master anything, and it must be a misnomer to call such a grounding superficial.

It has also been stated that "there is a screw loose in the training system for boys. Too much time is devoted to school, too little to seaman's duties, and their discipline is too slack."

It is difficult to dispute the first part of this statement, and it would be so with reference to any institution, but we must confess to having studied the system to find its defects, and failed. With regard to "too much school" that is rather an opposite assertion to "too much seamanship," and only goes to prove that some point adjacent to the happy medium has been reached.

TABLE No. 11.

PUNISHMENT.

A special scale of punishment is laid down for the boys of the training ships. Those generally given are the following:—

First. To have their meals at the defaulters' mess-table on the main deck, and to stand between the guns during the hours of recreation.

Second. Boys of careless and inattentive habits with reference to clothes, hammocks, or bags, are to be made to carry their hammocks, or bags, on their shoulders for a time not to exceed an hour a-day, and this to be limited to three days.

Third. Stoppage of liberty not to exceed two months.

Fourth. Stoppage of pocket money not to exceed two months.

Fifth. Caning over the breech not to exceed twelve blows.

Sixth. Confinement not to exceed seven days. In aggravated cases the delinquent may be put on bread and water for from one to three days.

Seventh. Birching (by special order). Light punishments have generally been found sufficient; the cases are very few, the conduct in general being remarkably good.

With regard to the slack discipline Table No. 11 speaks for itself, and the punishments that are therein laid down are strictly carried out. It is evident that such a feeling is not universal; Lieutenant Commander Chadwick, of the U.S.N., states in his report that¹ "I saw but one drunken sailor at this port (Plymouth and Devonport)

¹ Page 43, par. 4.

"during a stay of nearly two weeks, though many ships were in the harbour, and a great many men on shore. This change of conduct is attributed by every one to the influence of the training service; I have conversed with many Officers on the subject and found this opinion general."

Captain Fitzroy, R.N., mentioned a similar experience at this Institution in July 1875. He said: "For six weeks in the spring of last year I was at Plymouth, and during the whole of that time I only saw one blue-jacket badly dressed or drunk in the streets" * * * I mention it to show how much better their conduct is on shore now than it was some years ago. I attribute it mainly to the admirable system of training, &c.

Besides the punishments given in Table No. 11 for misconduct, an inducement is held out to the boys to work hard and behave well, by giving such as attain a high standard, and are clear of the defaulter's book, badges. These badges carry privileges, and the fact of having obtained them is noted on the boys' certificates and influences their future career. The whole system of our training ships is not to drive knowledge into a boy by main force just after his separation from home life and before he has got accustomed to the change, and we hope we have said enough to show that it is successful. Before leaving the subject of the training service, we would advocate that, if possible, a longer time should be spent in the training brigs, "at least one summer of from four to five months," and as the brigs wear out, we should be very glad to see them replaced by vessels of the "Cruizer" class, which we always have considered the most suitable for this purpose. They would train double the number.

Another blot, and one that has been strongly commented upon by both Naval Officers and the public press, is the accumulation of ordinary seamen and first class boys in the flag and receiving ships of the home ports awaiting sea draft. As early as August, 1852, Captain Lowe, in his evidence before the Committee on Manning the Navy, says on this subject: "Flag-ships are the receptacle for all deserters, stragglers, thieves, &c. In short, men of the worst character from the other ships. And the boys, with every precaution taken to prevent it, must be more or less thrown amongst them: at any rate they are aware of their presence, and by degrees become familiar with offences which, at their early age, must be injurious to them." Since that, many Officers have spoken and written on the same subject, notably Captain Wilson (who was for years in command of the training establishment), in a paper read at this Institution in July, 1875, says: "Taking one thing with another, boys are two years from entry until rated as men, or in other words, their average age on entry is sixteen; and taken throughout, they have about two months' sea service in the fleet as boys. Though our sea-going ships carry as many as they can stow, there are still from 1,500 to 1,700 constantly on dépôt, waiting their turn for draft. This delay is much to be regretted, and can only be avoided by keeping sufficient training ships at sea to provide for that proportion of boys (about 1,400), which are due to the men kept in our home ports.

"While thus waiting a considerable number of them reach their eighteenth year, and are, by order, rated men; thus the 1,200 ordinary second class may be taken to represent a body of sailors who have never been to sea at all." There can be no doubt of two things, first, that (as all Officers are agreed) no ordinary seaman, or boy, should ever be on board a harbour ship, or coast guard ship of any sort or description, and secondly, the difficulty in solving the problem, whereby the first may be obviated; we certainly regard it as the main question for discussion in the training system of to day.

It was clearly established by Captain Wilson, and must be known to all who have studied the statistics on the subject, that, under existing regulations, a very little more than half the seamen element in the Navy can be at sea at the same time. And therefore, it is quite clear that blue-jackets should serve their sea time first, and go into the harbour ships later in life, when they are married, or become otherwise suitable for such service:

The first thing we have to do is to keep our young A.B.'s, ordinary seamen, and boys at sea, as many as possible in cruisers, flying squadrons, and the remainder in first class ironclads. Without the most careful management and constant watchfulness, we have not the ships afloat to carry out this most desirable object.

Upon this point, we have no less an opinion than that of Sir Frederick Grey, for many years a Lord of the Admiralty. He says, in discussing Sir Thomas Brassey's paper on unarmoured vessels at the Institute of Naval Architects in 1875, that "the Navy comprised only about 18,000 continuous service blue-jackets, and yet small as that force was, we had not cruisers enough to give them the practice afloat which was necessary to keep them efficient." The problem of the organization of our young seamen, and the want "established by the unanimous verdict of all," it only remains to consider the cost, and the manner in which it can be solved with the greatest economy combined with the best result. We must confess that we consider no expense would be too great which gave to that Service which "is responsible for guarding our shores from the insults of an enemy and protecting the lives, property, and homesteads of the inhabitants of these islands," a body of thoroughly trained, efficient, and well conducted ten years' men, who, with the knowledge that they had got through the worst part of their service, and might look forward to at least the majority of the remainder in the coast-guard, or in a stationary ship at a home port, would be more than anxious to continue in the Service, and complete their twenty-one years for pension.

Those who were rising and had ambition would of course remain as Petty Officers and Instructors in sea-going ships, which would become the only road to an early warrant.

TABLE No. 12.

TO GET AT PROPORTION FOR SEA AND HARBOUR SERVICE.

Admiralty, 9th August, 1875.

Total number of seamen in Her Majesty's Navy on the 1st October, 1875 (exclusive of Kroomen, 426)	29,743
Total number of seamen in coastguard on shore on the 1st of October, 1875	3,870
	<u>33,613</u>

Total number of Blue-jackets in H.M. Navy on 1st of October, 1875	19,282
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The annual statistical Return, completed to the 31st of March, 1875, shows 27,430 engagements of continuous-service men in force (including coastguard men on shore), their respective periods of service being as follows:—

In the first year	3,741	In the eleventh year	555
In the second year	2,674	In the twelfth year	699
In the third year	2,073	In the thirteenth year	831
In the fourth year	2,120	In the fourteenth year	992
In the fifth year	1,974	In the fifteenth year	1,106
In the sixth year	1,522	In the sixteenth year	1,241
In the seventh year	1,439	In the seventeenth year	724
In the eighth year	1,477	In the eighteenth year	643
In the ninth year	1,380	In the nineteenth year	673
In the tenth year	1,001	In the twentieth year	558

Total 27,430

TABLE No. 13.

DESERTERS FROM 1865-75.

Total				Total			
In 1865-66.				In 1870-71.			
Blue-jackets	748			Blue-jackets	493		
Others	355			Others	236		
	<u>1,103</u>				<u>729</u>		
In 1866-67.				In 1871-72.			
Blue-jackets	707			Blue-jackets	516		
Others	352			Others	194		
	<u>1,059</u>				<u>710</u>		
In 1867-68.				In 1872-73.			
Blue-jackets	619			Blue-jackets	810		
Others	361			Others	262		
	<u>980</u>				<u>1,072</u>		
In 1868-69.				In 1873-74.			
Blue-jackets	583			Blue-jackets	829		
Others	292			Others	232		
	<u>875</u>				<u>1,061</u>		
In 1869-70.				In 1874-75.			
Blue-jackets	682			Blue-jackets	895		
Others	299			Others	283		
	<u>981</u>				<u>1,178</u>		

After seven years' commissioned service actually at sea, four in the Channel squadron, and three in two flying squadrons, we can speak at least with some experience of the efficacy of squadrons for the purpose of training. We believe that there is no other form which

comes near it. The establishment of a regular and daily system and routine for all, the emulation between the ship's companies at general drills and exercises, the high standard of excellence necessary to satisfy the ever watchful "flag," and the practice of exact station keeping, accurate anchoring, simultaneous weighing and performing evolutions, are all elements which must give squadron training the first place in the eyes of the world.

While in favour of a flying or training squadron of a somewhat greater magnitude than that going its rounds at present, we would not diminish by one iota the numerous Captains, and Commanders' commands, doing diplomatic and protection of British interest duty all over the world. We have it on the authority of Sir Frederick Grey that "it is essential that our force in peace time, should be on such a scale, and so employed, as to give to a sufficient number of Officers and men that practice and that education in seamanship, which are necessary for securing to us skilled seamen in time of war, and this object is best attained by the employment of small vessels on foreign stations, and of squadrons of large ships in the Channel and Mediterranean for evolutions."

To these suggested means of training, we would advocate the addition of a squadron of six specially built frigates, to act as the sea-going training squadron, independent of the elementary training squadron attached to the home training service, and supplemented by two frigates of the same class, to act as circulation training ships, taking more extended cruizes for the distribution of newly raised men and boys, all over the world, and to carry out all recommissioning duty. They should be interchangeable with the ships of the "flying or training squadron" proper, and relieve each other from time to time.

On the other hand, the training squadron itself should have a regular standard cruising ground never at any great distance from home, for it has been very properly urged as a reason against the existence of a squadron of this description that, on the event of a sudden emergency of war, from two to three thousand of the flower of the flock may be at the Antipodes, when very much wanted on this side.

Gibraltar is, in our opinion, by far the most suitable head quarters, and there is no finer exercising ground in the world than that lying between Gibraltar and Barcelona; not only is the weather usually all that can be desired for exercise, but the harbours and bays are all peculiarly adapted to anchoring and weighing under sail, and the towns visited are amusing and popular, and afford that variety which is absolutely necessary in the sea-going training service, under which head during peace time every ship in commission may be ranged.

As a change we would advocate a cruise round the West Indies, lasting from January till June, returning to Gibraltar, and repeating the inside round backwards and forwards, then effecting the relief changes and start afresh. We recommend the cruising ground¹ stated

¹ A chart was given in the original.

above from personal experience, and are of opinion that it would also be a much more desirable ground for many reasons for the Channel squadron as well, than the old ground of Vigo, Lisbon, and Madeira. It was only last winter that the Channel squadron were detained in the Tagus for nearly three weeks, by a constant gale of wind, and though every opportunity was taken advantage of there were not more than ten days during the whole cruise on which the regular drill laid down for the newly raised men and boys could be carried out. We maintain that on the Mediterranean side of the Spanish coast the ships could have comfortably kept the sea, and the drills carried out continually, thus benefiting the public service by the higher efficiency of their crews. The objection of their being inside the Mediterranean command has ceased to exist, as we had the honour quite lately of serving while in the Channel squadron, in all parts of the Mediterranean for two years. The squadron could still have their annual refit in the home ports, there being only a fortnight's economical speed between them and the proposed cruising ground. We may here mention as an argument in favour of our new ground that there is an objection to torpedoes and short practice at Vigo, and that the Tagus in the winter is not suitable. On the other hand, Gibraltar gives us the best small arm butts and drill ground to be found out of England.

On the subject of squadrons, Sir Thomas Brassey says "English crews will probably be most effectually stimulated to exertion by the spirit of emulation. Training ships should not be employed as single ships, but should be formed into squadrons." And Admiral Porter, of the United States Navy, recommends to the American administration, "more sailing in squadrons." "Nothing," he says, "improves a fleet so much as the ships acting together. By comparison, they are brought to perfection, and each ship in the fleet can adopt whatever is good in another." In his report for 1870 he said "that the practice squadron on the American coast would serve the twofold purpose of a school for Officers and men. With a practice squadron under an energetic command, a fine class of seamen could be brought forward for the Navy." And Admiral de la Gravière, who has given his opinion on most Naval questions, says relative to this one, "The squadron of evolutions is the source in which the martial spirit of our Officers and crews has always been stimulated and revived."

These statements apply more forcibly to our fleet than to any foreign Navy. Under the head "Objections to extended voyages," Sir Thomas Brassey remarks: "It would probably be admitted that the liability to desertion in the Australian colonies, and the prolonged absence of a large body of men who may be possibly required for the service of the fleet through some sudden and unforeseen political complication, constitute objections to the plan of sending away a large flying squadron on a voyage of circumnavigation.

"In a more limited voyage to Madeira, Rio, and the Cape, and back to England, ample experience for the purpose of training may be gained. At the ports visited, few temptations would be offered to

"desertion, and the extension of the submarine telegraph would bring the fleet into frequent communication with the Admiralty."

How much more forcibly could all these arguments be applied to the proposed cruising ground?

We have said that we strongly advocate "in order to carry out the detail of the general scheme contained in this essay," both for Officers and men, a system of circulation carried out by two ships annually, specially detached from the flying or training squadron to carry out this duty; their places being taken by the two circulators of the previous year.

The object being to keep our newly raised men and boys out of the "home ports, receiving ships," coastguard ships, and mastless ironclads, we must return for a moment to the period of elementary training and entry.

When the recruiting has been reorganized and candidates from all districts are more plentiful, it would assist our scheme if the boys were sent to the training ships for entry at stated times, say January and July, or March and September, so that they might mature for draft in batches, each boy having had his full time of instruction.

The periods at which the boys become eligible for sea draft should coincide with the periods at which the cadets from the "Britannia" are ready.

In this case there need be no delay, and the cadets and boys would go straight to the circulation ship whose turn it was, and she should at once proceed on her rounds, keeping up on her voyage all the discipline and training routine which would be her normal condition.

During the last few years it has been found desirable to reduce the number of lads trained for the Navy, and therefore, even if there was a short delay in starting them off to sea, the fresh entries will no longer press them into the receiving ships, by treading on their heels, and overcrowding the training ships. The circulation cruise would, of course, entirely depend on the requirements of the Service, and would be regulated by the Admiralty.

We may be asked, "Where are you going to get this squadron of frigates, for training squadron and circulation?" And it is a question which must be considered. We reply unhesitatingly, if it is worth while to train the men, if it is worth while to save them body and soul from ruin, build a training squadron. The whole squadron might be built and fitted out for the cost of one monster ironclad, and once established, organized, and in working order, the expense would be small, compared with keeping ironclads in commission, for we maintain that, with a training squadron such as we advocate within a day or two's sail of Gibraltar, it would only be necessary to keep a large reserve of fighting ironclads ready for sea in our home ports and not actually in commission. Suppose the squadron could not get home from Gibraltar; "the mountain must go to Mahomet," and the ironclads would be filled up with coal and go out full speed.

It must be remembered, moreover, that we do not propose to legislate for the actual moment; we have to look ahead, say to the end of this century; and unless a radical change occurs in our ironclad

building, we shall be far more in want of a sailing training squadron than we are at present; and therefore, if the cost was considered too great to build and establish the squadron at once, we might make use of such vessels as we have at our command, at the expiration of the present flying squadron cruise, and gradually replace the ships chosen as they become worn out, by vessels of the standard training squadron and circulation type.

It was only the other day that we read an excellent article in the *United Service Gazette*, on the subject of our young seamen remaining in the home ports and reserves. The writer says, after describing the condition of things, "It only requires a duly considered and well organized scheme to be matured for the whole of our young hands to be at once sent into training on board a regular sea-going ship of war; whether our young seamen are in harbour or at sea they are paid and fed; under these heads, therefore, there would be no expense, and instead of doing nothing in harbour, and getting into mischief, they would be, if at sea, doing something towards earning their 'pound and their pint.' . . . and further on he says, 'why should there not be a ship commissioned for the express purpose of going the rounds, say to the Mediterranean, West Indies, and Panama? The 'Thalia,' wooden corvette, which is fitted with ample accommodation, would be a very desirable ship for such service . . . her steam power would be considered wholly as auxiliary, and as a sailing ship she would be a good training ship in herself, during her passages." The "Thalia" would not be a bad vessel in order to give the scheme a trial, though we do not consider her suitable to do the duties of a training squadron and circulation ship. We have already stated that it would be desirable to have large roomy first class frigates for our purpose, and the only substitutes we would employ are ships of the "Immortalité," "Newcastle," or "Undaunted" class, though they would cost at least 25,000*l.* each to get ready, which sum would go a great way towards building the new squadron. At present, it would be as well to follow the system of the iniquitous old Southern planter, who found it cheaper, in dealing with slaves, to "use em' up and buy more," than to work them lightly and tend them when they were sick.

The complete success of the system of training the midshipmen and orderly seamen in H.M.S. "Cruizer" in the Mediterranean leads us to hope for a further development of the system, especially with reference to the crews of our mastless ironclads; and it has been suggested by Sir Thomas Brassey that we should have two vessels of her class attached to each of our home ports. He says: "If, however, two tenders be attached to the flag-ships at Portsmouth, Plymouth, and Sheerness, their cruizes not extending beyond the chops of the Channel, or perhaps the coast of Portugal, vessels of the 'Cruizer' class would be admirably adapted."

One vessel of this class can keep 1,000 men in training, *i.e.*, the crews of two or three mastless ironclads. Before leaving this portion of our subject, we will analyze a letter addressed to the *Times* by Admiral Rous in 1876. He speaks of his three letters of 1871, and says

that "they foreshadowed the numerous catastrophes which have since occurred, singularly remarkable for the ignorant indifference to avoid danger; and an apathy and want of energy to save the ship. These accidents will occur again and again, owing to want of seamanship, which cannot be in a worse state, and to the faulty education of young Officers." He then proceeds to give a short "résumé" of the career of a fine intelligent lad, who passes a brilliant examination, and goes to a mastless ironclad, passes for seamanship owing to the crude notions of both parties on the subject; is made a Lieutenant, and, knowing nothing, capsizes a ship. It is needless to state that this is the extreme view of an adverse critic, and that the case quoted is merely to point the excellent moral which follows: "As a Naval Power is not estimated by the size and number of its ships, but by the superior skill of its Officers, and by the pluck and courage of its seamen and marines, let us examine our resources. We have lost a great source of recruiting the Navy from the Mercantile Marine, owing to the abolition of the Navigation Laws introduced by Oliver Cromwell, to whom we are most indebted for our Naval superiority. These laws compelled the British merchant ships to be manned by British subjects, and to employ apprentices according to the amount of tonnage. If this law could be revived, it would in a few years add 40,000 men to our list of seamen.

"English merchantmen employ foreigners to the amount of three-fifths, and I observe, that in an English merchantman, when the Captain and two mates were murdered, there was only one Englishman among the crew."

This fact has been deplored by many Officers during discussions at this Institution, and elsewhere. Should no remedy be found it is quite clear that we cannot rely on our merchant marine for men in the day of our need.

We lay particular stress upon what follows in Admiral Rous' letter, coming as it does from one who was well known not to overrate the seamanship of the rising generation. He says, "We may congratulate ourselves that the seamen on board Her Majesty's ships are better educated, more amenable to firm and steady discipline, because they are not addicted to drunkenness. They are the men above all others to make first class seamen, and when well commanded they will fight against all perils and dangers to the last gasp; and here I must remark that the training ships for boys deserve *national encouragement*."

"Double the number of ships of instruction should be added; that is working in the right groove. The conduct of the boys, when the *'Blenheim'* was in flames, proves that the breed is as plucky as ever.

"To regenerate the Navy, and to make young Officers seamen, a flying squadron of small sailing ships should be constructed. They should be kept always on the move visiting every port on both sides of the Atlantic. If they can work and manœuvre well under canvas, they will have no difficulty under steam. In this squadron, midshipmen would serve their first three years, and work with the miz-topmen so as to be taught the duties of a seaman."

This letter, together with the mass of evidence we have endeavoured to bring to bear on the subject, goes to show the fearful importance of seamanship training for our men, either in sailing ships or in auxiliary steamers, which only use their steam on an emergency.

Every one must agree that an ironclad, even with a gymnasium in her, is only a passable school for seamanship training. How much worse a mastless ironclad. The crew of the latter should consist entirely of able seamen and marines, and their knowledge in seamanship should be kept up by turns in the "Cruizer," or whatever training vessel may be attached to them.

Gunnery and small-arm drill, cleanliness, and discipline can all be taught on board the parent ship, but seamanship can only be mastered under sail at sea, in daily evolutions, and the occasional necessary preparations for bad weather. We were much struck by the observations of Lieutenant Frederick Collier in October, 1879, in a paper on Naval education in *The United Service*. "Seamanship," he says, "is now just what it always has been, and always must be. There is only one school in which it can be acquired, and that is afloat under canvas. The Officer skilful in handling his ship under sail can make no failure with her under steam, while the steam seaman, when his engines are disabled, will be helpless and hopeless. Neither the differential calculus, nor dynamical study, will enable an Officer to manage his ship in a gale of wind or in action. He must neither overlook nor undervalue plain duties while studying mathematics and philosophy."

We find, after a searching examination of carefully collected opinions, that all are in favour of "sailing training vessels" or "auxiliary steamers," and a large majority in favour of a training squadron.

We believe that the scheme we advocate is practicable, and might be carried out with economy. It would become at least a regular and palpable system, and could then be altered and regulated so as to suit the wants of the times.

We have given a great deal of space to the seamanship part of a blue-jacket's training, because it is absolutely necessary to the safety of the ship, and therefore every man should be first a seaman and afterwards a gunner, torpedo man, or whatever will make him available as a fighting unit; but we must remember that however desirable it is that our ships should be sailed in safety during peace time, the moment a serious war breaks out, actual practice aloft ceases to have any value as compared with gunnery practice. You will then want Officers who can dexterously handle their ships under steam at high speeds, and men who have an accurate knowledge of the working of their guns and who will stand by them in action, also a large contingent of torpedo men for work in boats, mining, counter-mining, &c.

The present gunnery and torpedo establishments of this country in the "Excellent," "Cambridge," and "Vernon" can scarcely be surpassed in the practical teaching of the drills and exercises laid down in the gunnery book, and also the theoretical course, and the system of making every rated man become a "trained man" is admirable. As long as every man before being permitted to volunteer for the gunnery

ship must be an "able seaman" and trained man, there is no fear but that the Service will produce an invaluable class of seamen gunners. These men become the instructors in our sea-going ships, and here we may remark that so qualified and painstaking are the instructors, and so intelligent are the main body of the men, that we have hundreds of first rate artillerists and splendid shots who, from various causes, have never been near the gunnery ships.

It has frequently been advocated, and it is unquestionably true, that we do not pay sufficient attention to the subject of accurate firing.

The already enormous and growing dimensions of Naval guns render the value of a single shot in action incalculable, and therefore we cannot have too many "heavy gun marksmen;" we have rifle marksmen, why not heavy gun? Prize firing goes some way towards what the establishment of a regular grade would complete. Captain Robert Scott, R.N., speaking on Captain Wilson's paper at this Institution, in 1875, said, "We require more skill among our seamen gunners. The low standard of skill is not creditable. We have only four large guns in some of our biggest ironclads, and hence the men firing them ought to be *highly educated* marksmen."

And among the rising generation, Commander McHardy, in his essay on the gun, ram, and torpedo, written for the Junior Professional Association, stated as follows:—"The Navy does not possess sufficient skill in firing at objects in rapid motion to ensure either accuracy or rapidity. There are no men specially taught by intelligent eye-training to attain these results . . . There are no Officers or others specially trained and distinguished for their skill in directing the fire of the guns simultaneously on fixed bearings." On the above, Sir Thomas Brassey remarks, "Why not at once recognize the qualification of marksman as the one essential test for the rating of seaman gunner, as it is also the one and only purpose of a gun to hit the mark? Is the ability as a marksman sufficiently considered in awarding the various rates of gunnery pay under existing regulations?" Actions of the present and future, whether decided or not by the ram, will depend as much as ever on the accuracy of the fire and the number of hits. Produce what gun you will, fit it with the most perfect mechanism, it must be accurately fired or your labour is vain. Therefore it will be readily admitted that we should do our utmost to improve this branch of Naval training.

It has also been suggested and advocated by many, notably by Sir Howard Douglas, that it would be advantageous to have one or two cruising ships for gunnery practice on the ocean. As far back as 1840 the French made an attempt in this direction, by fitting out the "Amazon" *Frégate d'instruction* and attaching her to the famous squadron of evolution commanded by Admiral Lalande, and later, in 1848, by fitting out the "Minerve" as "L'école des matelots canonniers."

Everything which tends to the increase of the practice of gunnery at sea must be beneficial to the Service, especially if carried out in a regularly commissioned, highly disciplined vessel of instruction; and therefore we would join the advocates for this addition to our training

strength, especially as it would give us the power of training more seamen gunners, for we entirely agree with Sir Thomas Brassey that "the number of seamen under instruction in Naval gunnery should be increased to an extent which may suffice to furnish at least 5,000; one thousand of these should be always available for embarkation at the home ports as recommended by the Royal Commission for Manning the Navy (1859)."

On the subject of small-arm drill and landing parties, it is needless to express an opinion; on the one hand it will be sufficient to quote from James, Vol. I, p. 115, 1793: "Although the land is not the element on which seamen are expected to shine, the exigency of the case required that a great proportion of them should act on shore at Toulon. Whether as artillerymen in the batteries, or *musketeers in the field*, they contributed their aid, always with cheerfulness, and never without effect. Their skill and training in action, not less than their strength and activity in the many laborious duties incident to a service so full of difficulties and dangers as the one they had engaged in, afforded a theme of praise and admiration to all who witnessed their exertions." On the other hand, let the public records of the deeds of present landing parties speak for themselves; we believe that nearly the same words would meet both cases.

The absolute necessity for the rapid transmission of orders by means of the signal department has been affirmed again and again by Officers of all grades and shades of opinion. No one will deny that we "require in these days, when the time that elapses between decision how to act and action, may be counted in seconds," a specially trained body of intelligent men through whom the orders of a Commander-in-Chief are conveyed to his Captains at a moment when the very existence of this great country may depend upon their accurate reading, and correct reports. Though great care is taken in the selection of boys for this department, and their training while in the harbour training ships is all that can be desired, there is a great difficulty, even in fleets, in keeping up their knowledge to the necessary standard, though they are exercised day and night; and when they get away in small craft and cruisers, it is next to impossible. In either case, their education in seamanship is not continued after they are rated third class signalmen.

After considerable experience, we can safely state that the signalmen of the Navy, though an intelligent body of men, do not come up to the standard which is necessary for the proper performance of their very important duty.

Changes have taken place in the signal department of late years, as in every other branch of the Service, and a signalman must be master of many more methods of communication, both by day and night, than he had to be twenty years ago. The Semaphore has taken the place of "finger talk," and, to a great extent, of the vocabulary signal book. Flashing has replaced and rendered obsolete all other methods by night, but the ever-constant look-out and watchful eye is more necessary than ever.

The changes above stated appear to render it necessary that higher

and more systematic training should be established for the signal staff. We believe that we get the best boys the training ship can produce, so well grounded in the elementary details that there is a difficulty even in fleets to keep their knowledge up to the standard at which they start, and when they are drafted to cruisers they naturally get little or no practice.

We would propose a regular training establishment for signalmen, if possible, in connection with the Officers' tactical course suggested in the first chapter.

Every signalman, on paying-off or return from foreign service, should join this establishment, and go through a thorough course and examination, in order to confirm him in the rate he holds, or to rate him.

Stokers.

The present regulations for the entry of stokers are very general; able-bodied men of good character, qualified to serve as Stokers in Her Majesty's ships, will be entered as required.

They must be between 18 and 25, and not less than 5 feet 4 inches in height, and not less than 32 inches round the chest. They are entered and received by the "Indus" at Devonport, the "Asia" at Portsmouth, "Pembroke" at Chatham, and "Nankin" at Pembroke. They may also be entered through all the established recruiting channels for Her Majesty's Navy, such as coast guard, drill ships, marine recruiting offices, &c. The pay is good and they are on the same scale as their brother blue-jackets for pension. There is no difficulty in keeping up the required numbers; in fact, at the present moment, we are not making any entries, and we believe the country would find no difficulty in finding a complement of stokers for all ships that would have to be commissioned in the event of war.

Muscle and steady character are the necessary qualifications, and for this reason it is better to wait till their characters are formed and their bodies and muscles full grown, before entry. We do, however, enter a few from the trained blue-jacket class, but as these are usually ordinary seamen who fail to pass for A.B. they cannot be said to be of a high class. Stokers are drilled in cutlass and small-arm drill, and make excellent pioneers for landing parties. They also work on deck with the hands at drills aloft, in and out boats, &c., and in action besides the stokehole party, they tend the fire main hoses, work cocks and valves, &c. Many of them are mechanics, and those who are not on entry often become handy at a job. Many are also good oarsmen and it is not uncommon to see a stoker boat's crew with a good place in a regatta.

Ship's Artificers.

This class have exactly the same regulations, except that they are examined in their respective trades at Sheerness, Portsmouth, and Devonport, and, if rejected, have a free pass back to their homes. In their case also the number is complete, and no entries are being made at present. The trades are shipwrights, carpenter's-mates and

carpenter's crew (when wanted in excess of number trained), blacksmiths, caulkers, armourers, tinsmiths, and plumbers. They are also taught cutlass and small arm, and are attached to landing parties, and work on deck as idlers.

With the remainder of the dry idlers, we have little to do in this essay, but cooks, stewards, bandsmen, &c. are all drilled in the magazines and handing rooms, and like everybody who exists on board a man-of-war, have their place in an organization, the one aim and object of which is to render her a perfect fighting machine.

The magnificent body of marines who form no inconsiderable a portion of the *personnel* in a modern ironclad are, we consider, admirably adapted to the double duty they have to perform. They are capable of doing all the deck work in any class of vessel, and are excellent gunners.

It is not within our province to suggest reforms in this corps; but to render them still more valuable to the Naval Service we would advocate that a far greater number of them should be trained as artificers, and that they should frequently have opportunities of working in the stokehole, in order that, on an emergency, they might act as efficient stokers.

We believe that the time has come when a change in their sea-going kit, rendering it more uniform with that of their Naval brothers in arms, would be beneficial to the Service and to the men themselves.

CHAPTER IV.

The Reserves.

The absolute necessity in this maritime country of the establishment of an enormous Naval Reserve is so self-evident that it will need very few words to prove the fact.

It will be sufficient to show what were the opinions of men who lived in a time when the constant thought of statesmen, sailors and soldiers, were directed across the Channel, when war panics were frequent, and the national independence at stake.

Mr. Lindsay, one of the Commissioners on Manning the Navy, in 1859, in a letter protesting against a portion of the report, says, "The guarding our shores from the insults of an enemy, and protecting the lives, property, and homesteads of the inhabitants of these islands, is one of the most important duties of the executive power. During the memorable war which was terminated in 1815, England found, more than once, the whole of the Continental Powers confederated against her. Her maritime rights were defied, the invasion of her shores was imminent, and her national independence was threatened. So much for the past; the present is also full of warning."

It is undeniable that the same may be said at this date, and, notwithstanding the fact that the present organization of the Reserve

is far more efficient than it ever has been during the history of this country, there is a soporiferous feeling, engendered by long naval peace and fancied security, and we would like to see the naval patriotic spirit of the population awake to the value of an immense purely voluntary, self-supporting, self-instructing Naval Reserve, ready to go to sea when called upon to strengthen the first line and carry the war into the enemy's country; but whose main object would be the protection of our ports and coasts by manning the guns and local gunboats, laying torpedoes and exploding them, and assisting to man and fight the numerous impressed tugs, torpedo boats, and merchant steamers of all descriptions which would be utilized for war purposes.

The evidence of Sir T. Hastings before the Commission on Manning the Navy, 1852, and his letters to both Lord Auckland and Lord Minto, together with a letter from Admiral Bowles and himself, to the secretary, with reference to the formation of a Coast Militia, afford us an insight into the views held from 30 to 40 years ago.

In this last letter, they state that "The great naval displays previous to 1800 were owing to impressment," and they add that "such a system is at variance with the increasing civilization and feeling of the age in which we live. But it is, nevertheless, obvious that if we relinquish a resource on which the security as well as the honour of the country has hitherto depended, without providing a sufficient substitute, we shall fail in one of our most important duties, and incur an awful responsibility. The tendency of the present generation is too much towards ignoring dangers of which they have happily had no experience, and against which it is troublesome or expensive to provide; but it becomes those who govern this great country to view the question of its defences with a more enlarged and statesmanlike eye; to reflect that the dangers over which we have hitherto triumphed still continue to exist, and that the improved organization which the other great maritime Powers have adopted calls for increased precautions, instead of justifying supineness on our part.

"It is fearful to contemplate the confusion, the panic, and the actual national peril which would inevitably attend any sudden alarm or apprehension of war at this moment."

And again, Sir T. Hastings refers to the same subject in a letter to Lord Minto, dated 15th February, 1852: "I observed with deep anxiety in 1844 that we were precluded from preparing, because we were negotiating. We had then absolutely no force at home. Had war ensued, what would have been the result? It is now known the French were ready to act. From this I infer if we are wise all needful arrangements to call our steamers into immediate life and action should be made in peace, if we desire to maintain and enjoy that invaluable blessing."

The Royal Commissioners on Manning the Navy, in 1859, were desired, in addition, to report "especially as to the way in which the valuable services of the seamen of the mercantile marine and seafaring population of the United Kingdom may be rendered more readily and willingly available when required for naval service."

They had before them the numerous schemes for Coast Reserve and

Militia, and they thoroughly considered the various questions of the Marine Reserve, the Coastguard, Naval Coast Volunteers, Longshore Men, Short Service Pensioners, Volunteer Reserve Force, Shipping Interest, Apprentices' and Merchant Seamen's Fund, all at too great a length to afford but a passing glance in these pages.

The evidence most suited to our views was given by Captain W. H. Hall, R.N., who had lately made a tour of the districts he mentions, in order to gather accurate information. He says on the 30th August, 1852: "It is my opinion that the fishermen, from their occupation, are fit to serve in the Navy, and, from their being stationary, more easily to be obtained. They would soon accustom themselves to the duties of a man-of-war. A large portion of these men, who number about 130,000,

"In England	..	..	21,000
"In Scotland	..	..	40,000
"In Ireland	..	..	68,000

"could be made available for the Navy, or for protection of the coast, as a Marine Militia, but from my own personal knowledge of the character of the fishermen, it would firstly be of permanent importance to send some practical man amongst them, well acquainted with their habits, to explain away the prejudice that exists against service in the Navy."

He also stated that the best description of men were to be found at Penzance, Brixham, Brighton, Hastings, Folkestone, Deal, Barking, Colchester, Lowestoft, Yarmouth, Cromer, Berwick, Dunbar, Newhaven, Anstruther, Aberdeen, Peterhead, Cromarty, Wick, Shetland, Orkney and Western Islands of Scotland.

"The fishermen on the coast of Ireland are a most numerous body, particularly at Galway, Kinsale, Dungarvan, Wexford, Bearhaven, and Carlingford, but they are better fitted for shore defence than serving afloat.

"They should become a registered body and they should be divided into three classes—

"1st Class to consist of men from 19 to 30; these men to serve afloat in a man-of-war for five years.

"2nd Class to consist of those from 30 to 40 years of age; these men not required for foreign service on board a man-of-war, but merely in defence of coast on board steam vessels or gunboats.

"3rd. From 40 upwards; these men to be made available for the protection of their own immediate ports or neighbourhood."

Captain W. H. Hall submitted a plan which was made known to our Government, and explained to the Minister for Foreign Affairs in 1844, for making the commercial packets and steamers of every description in England and her colonies available for the purposes of war.

How much more important and what a far greater element of strength would the development of such a scheme be now; enabling

us at any moment to concentrate at a given point the steam power of our Mercantile Marine and thereby imparting to it the full effect of a line of coastal fortifications.

Captain Hall's idea, carried out now, would beyond a doubt succeed in immensely enhancing our means of defence during a period of hostility. He wrote before the torpedo era, and we maintain that his scheme is rendered more important and more feasible than ever by the introduction of this defensive and offensive weapon.

He also suggested a scheme to replace apprentices under the Merchant Shipping Act, which probably helped to lead to the admirable system of merchant training ships which now exists, the details of which are given in our Tables.

Sir J. Stirling suggested a system of "depôts, with their contingents "afloat, in the proportion of 40,000 in commission to 20,000 in "reserve," and this may be said to be practically the effect of the continuous service and coast guard reserve.

Many other systems were suggested, notably that of Mr. Registrar Pennel which consisted of short service and a pension, as a retainer, of about 9*l.* a year.

Nearly all the evidence and schemes touched upon the necessity of inscribing the fishing population and coast trade, and so developing this enormous dormant power in the time of need.

The mass of the ablest opinion in the Empire is backed up by Admiral Rogers in a letter written when he was Naval Attaché in London, where he says, "To inscribe the fishermen, the boatmen and "the whole maritime population, to give them a certain organization and naval training, would be an enormous addition to your "maritime strength."

We would add that the real perfection of this scheme would be to inscribe them as self-supporting volunteers, and we believe that it is not impossible.

TABLE No. 13.

THE ESTIMATES FOR THE RESERVES FOR THE YEAR 1879-80 WERE AS FOLLOWS :

Subsistence allowance for Officers of the Royal Naval Reserve while	£
under drill	1,000
Annual retainer to seamen of Reserves	81,000
Drill pay and lodging allowance	38,000
Medical fees for examinations, targets, repairs of arms, &c.	1,500
Travelling expenses of Officers and men	2,800
Fees to registrars for enrolling men, &c.	4,500
Remuneration to Officers of Coast Guard who are in charge of batteries when drilling men	2,000
Erection and repair of batteries for drilling	7,000
Rent of batteries, carriage of ammunition, &c.	100
Pay of Pensioner Gunnery Instructors for Mercantile Training Ships	600
Capitation allowance for boys entered from Mercantile Training Ships	500
Sea pay to Officers and crews of drill ships of the Naval Reserve	25,526
Victuals for Naval Reserve	8,229
Victuals for the Reserve men when on drill afloat	44,100
Repairs to drill ships	1,800
Medical attendance, &c.	1,528
Total	<u><u>£220,183</u></u>

COMPARATIVE COST OF FLEET AND NAVAL RESERVE MEN.

The wages of the 30,887 petty officers, seamen, &c., serving in naval vessels amount to	£ 1,119,954
Amount required for victualling, supplying gratuitous clothing, &c., to above (about)	650,000
Total.. .. .	<u>£1,769,954</u>

We will now consider the existing reserves with a view to the development of our advocated system.

The organization of our reserve consists at present of a total enrolment of 17,000 men, of whom about 12,000 are of the first class.

There has never been cause to call them into active service, and so it will readily be conceded that they have been a considerable charge on the State, with but little apparent result. Lieutenant Commander Chadwick, after his tour in this country, remarks that great endeavours have been made of late years to render the reserve popular, and the efforts seem to have met with success, many men of the fisherman class having been enrolled in late years. These men are particularly valuable as having a fixed residence and being well trained seamen as far as mere seamanship goes.

This is a matter for congratulation as it proves by actual practice that the objection that the fisherman had to man-of-war life is diminished, we hope, in a great measure owing to the abolishment of corporal punishment and to the humane treatment now experienced by our men.

The reserve is divided into three classes.

In the first class the retainer is 6*l.* per annum; in the second 2*l.* 10*s.*, and a suit of uniform clothing; and in the third a suit of uniform clothing only.

In the first class, before entry, a man must prove at least five years' sea service within the preceding ten years, one of which must have been served as an able-bodied seaman.

Every applicant must have been to sea within four months of his application, and declare his intention of following the sea for at least five years longer. Should he fail to prove his services, he must pass before two Naval Officers in seamanship.

In the second class, before entry, a man must serve at least three years at sea, and of this time at least six months as ordinary seaman. In both these classes the men must not be above thirty years of age, and be in good health.

Men from the Royal Navy who have been discharged as A.B.'s with good character may enter up to thirty-five.

The third class may be termed special, and is the outcome of the Merchant Service training system, and bids fair to produce a large number of the reserve as the system matures.

Boys.

TABLE No. 14.

SPECIMEN OF MERCHANT TRAINING SHIP.

The number of boys received during 1878 was	86
The number on board at the end of 1877 was	243
Total	<u>329</u>
Of these there were sent to sea as apprentices	16
Ordinary seamen	53
Stewards	7
Sent on shore as unfit for sea	20
Died	2
Royal Navy	4
Total	<u>102</u>
Leaving on board, December, 1878	227

Expenditure, &c.

	£	s.	d.
Salaries and wages.. .. .	1,205	8	4
Provisions	1,644	6	2
Maintenance and repairs of ship.. .. .	411	10	4
	£	s.	d.
Clothing for boys (£203 18s. 6d. on hand)	705	7	3
Less profit from clothing made and repaired on board.. ..	110	9	2
		594	18 1
Coals, light, water, &c.	157	5	5
Furniture, bedding, &c.	102	3	7
Printing, books, stationery, and advertising	127	5	0
Medical, &c., expenses	80	9	0
Rewards to boys for good conduct	23	1	7
Outfit for 102 boys sent to sea	366	2	0
Deduct amount received from boys			
towards their outfit, &c.	53	15	0
Enrolment fees, R.N.R.	66	0	0
	119	15	0
		246	7 0
Office expenses (including collector's commission)	266	8	8
Expended in working the institute during 1878	4,859	3	2
Each boy sent to sea has cost (taking the last as an average year) £60.			

The regulations under which they enter are as follows:—

(1.) They must have been two entire years under training in a training-ship, and subject to inspection by the Admiralty and the Board of Trade. They must also be under engagement to serve in a Merchant Ship at sea.

(2.) They must be sixteen years of age, and not less than 5 feet 1 inch in height, and 30 inches round the chest; of robust frame, &c.

(3.) They must be able to read and write, and show satisfactory progress in cutlass, small-arm, and gunnery drill, as well as in elementary subjects relating to seamanship and navigation, such as log, lead, com-

pass, rowing, &c., and must produce a certificate of good character from the Captain of the training ship.

(4.) At the age of nineteen they will, having served six months at sea, be eligible for promotion to the second class reserve, and afterwards to the first if in all respects qualified. Boys in the third class who become second and first, count three years time served as one for pension; provided they comply with the drill regulations as to their drill and whereabouts.

Boys from reformatory ships are not eligible.

The enrolment is for five years, and five enrolments must be served for pension. All pensioners must be in the first class, and on becoming so, can count half second class time. The compulsory drill is 28 days in the year; during drill the men are paid as A.B.'s and ordinaries in the Navy. They are subject to Naval discipline, and are taught pistol, cutlass, rifle, and great gun exercise.

In remarking on the organization Lieutenant Commander Chadwick says: "There is no doubt that the men enrolled under this organization are a very valuable adjunct to England's regular Navy; though scattered as at least one-third are over every sea, the whole force could not be quickly got together. It is for this reason that a strong effort is made to draw in the fishing population hardy and able seamen who would always be at hand. Serving at home and in the coasting trade are 11,940; in the event of war, these men can easily be had." The cost of the reserve is given in Table 13, and though it has been argued that we could add a force of 3,800 men to our Navy for the money expended on the 17,000 reserve, we maintain that such argument is outside the question.

We do not want more men on active service during peace time, but in the event of war such as might burst forth any day, with a confederation of foreign Powers against us, we should require and must have an enormous reserve from which to draw the remainder of our required complements which could not be supplied by the standing Naval force.

What is the value of our high and expensive system of training, but that in war time we may become a body of instructors, every man jack of us?

In the old wars, it was well known that perhaps one-third of a ship's company were "good men," a third moderate, and a third trash. In future we hope that one-third will be Naval "trained men" and instructors, and the remaining two-thirds marines and Naval reserves with no trash in the ship, and to insure such being the case, any money spent on the reserves will prove a good investment. The whole financial question is one of insurance, and if it is a good thing to insure life and property in the case of ordinary individuals, how much more the life and property of the country? By the Officers R.N.R. Act, 1863, 26 and 27 Vic., cap. 69, it is enacted as follows:—

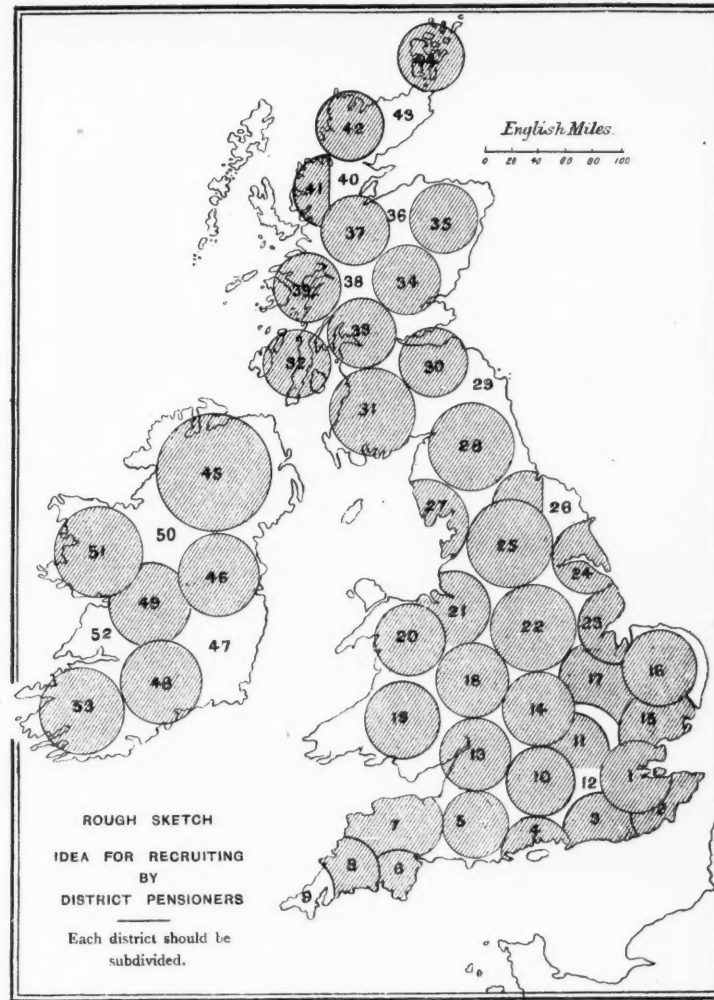
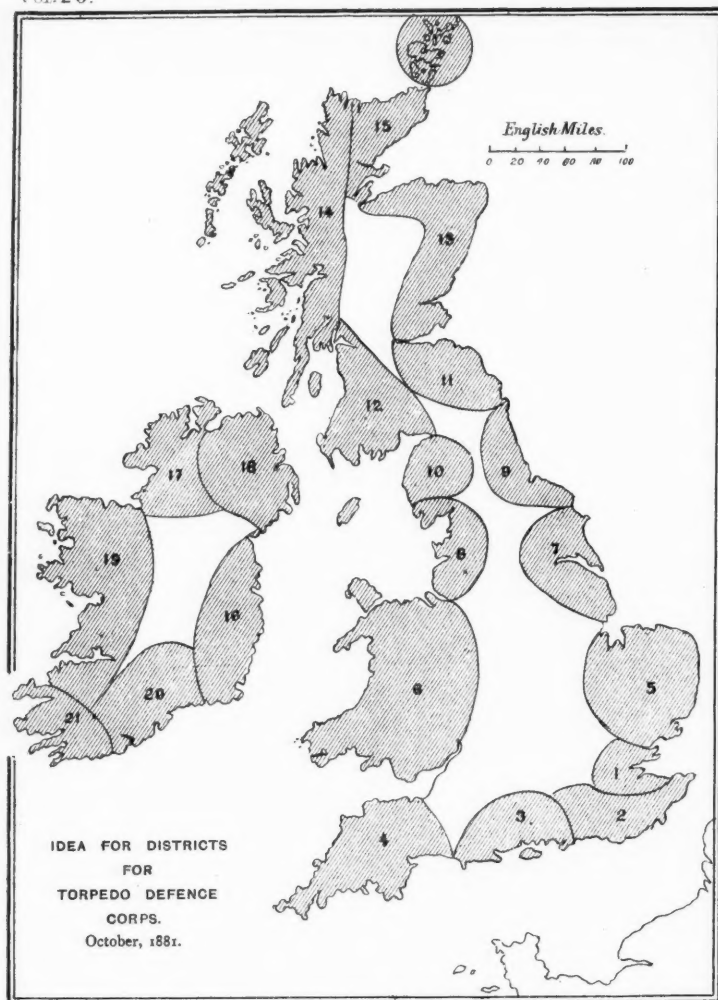
"1. It shall be lawful for Her Majesty to accept from time to time the offers of any persons who have been, are, or shall be, masters, mates, or Engineers of ships in the Merchant service aforesaid," &c.

The following regulations were issued under this Act—

BRITISH ISLES.

Journal RUS. Institution.
Vol. 26.

Pl VI



1. Thames (London Brigade).
2. S.E. Coast Brigade.
3. Portsmouth & Isle of Wight.
4. Plymouth & S.W. Coast.
5. Wash.
6. Welsh.
7. Humber (York).

- REFERENCE.
8. Mersey (Liverpool).
 9. Tyne.
 10. N.W.
 11. Firth of Forth.
 12. S.W. Scotland.
 13. N.E. Scotland.
 14. Clyde & N.W. Scotland.

15. Northern.
16. Dublin.
17. N.W. Ireland.
18. Belfast.
19. Western.
20. Cork.
21. Berehaven.

Vegetius, Book I., chap. iii.

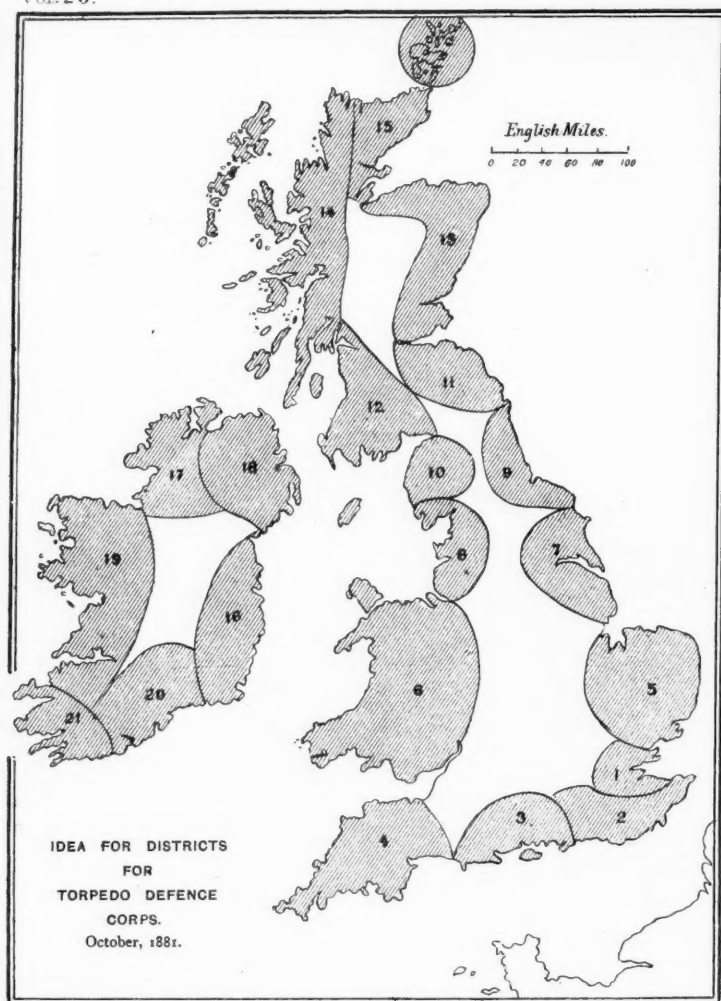
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sunt tirones.

Rural v opidan recruiting.

BRITISH ISLES.

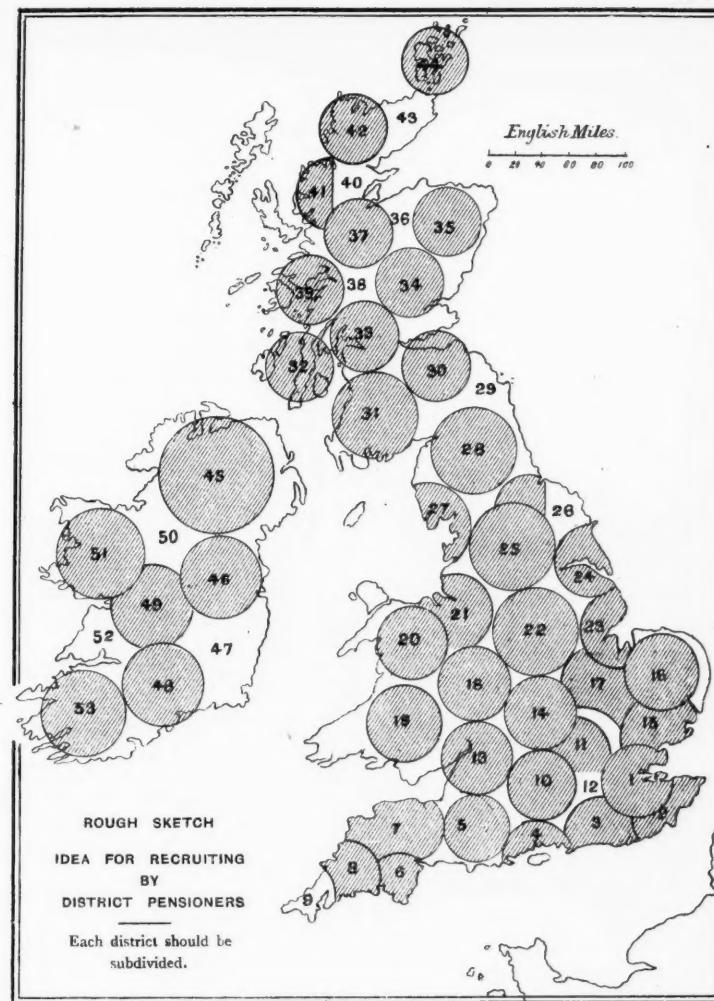
Pl VI



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15. Northern.
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19. Western.
20. Cork.
21. Berehaven.



Vegetius, Book I., chap. iii.

utrum ex agris an ex urbis utiliores

sunt tiroes.

Rural v opidan recruiting.

Lieutenants not to exceed	130
Sub-Lieutenants	270
Engineers	100
First Assistants	100
Second Assistants	100
Total	700

The actual number of Lieutenants is 79, Sub-Lieutenants 77, Honorary Lieutenants 89, Midshipmen 126, Engineers 2.

The midshipmen are all entered from the "Worcester" and "Conway" training ships. The addition of midshipmen to the Royal Naval Reserve in 1872 raised the total number of Officers allowed to 900.

The extremely small number of Engineers who have availed themselves of the Act would make it appear that the advantage gained is not of a sufficiently tempting character. It is quite clear that our reserve in this department has no apparent strength though the merchant steamers utilized for war purposes would probably carry their Engineers with them, and we should probably command the services of such ships' Engineers as would be forced to lay up during the hostilities.

In addition to the R.N.R., the key note to the "Volunteer Reserve" has been struck, by the establishment of the R.N.A. Volunteers.

This force was formed, for administrative purposes, into brigades of four or more batteries, each battery consisting of from sixty to eighty men. They are entirely for coast protection in batteries and gun-boats. They are a purely voluntary corps, and it does them great credit that their march past at Windsor attracted general notice. We hail with delight every additional step in this direction.

There must be thousands of patriotic operatives and mechanics at or near our seaports, who should receive every inducement to enrol themselves as a volunteer "Torpedo defence corps."

The expense to the country would be small if, on their attaining a certain standard, they were to be supplied with a first class torpedo boat, and mining launch, set of mines, &c., according to the size of the district protected, and the nature of the locality to be defended.

The numerous "Torpedo Instructors" and men who will become entitled to pensions might find useful employment as "Volunteer Instructors" in this corps; and the country would still have the benefit of the education which is now being lavished upon them.

This force should not be liable to go to sea unless voluntarily, and all its drills, tuition, &c., should be carried out on much the same principle as those of the "Army Volunteer Force."

Except during war this force should not be under the Discipline Act or Articles of War.

Every British subject of good character and sound constitution should be eligible. Branches of this corps should be particularly encouraged in our Colonies.

We have seen the proportions to which the Army Volunteer movement has swollen. Why should not the Naval Volunteer movement do the same? It only wants to be energetically started and encouraged at all ports.

In order to insure a uniform system of recruiting in peace time, and to assist the necessary augmentation in the number of men required on a sudden emergency of war, we would advocate that men of good character, on being discharged from the Navy, be appointed to districts as near their homes as possible.

They should be responsible for recruiting the best boys in their districts for the Navy, and have a knowledge of those who would come forward in case of war.

A small increase of pension or a cottage would be sufficient remuneration.

By this means, we should get more into the heart of the rural districts for a part of our *personnel*, and we should give employment to our pensioners, for at present we train the boy with the utmost care and bring up the man, but, we think, take too little care for the fate of the pensioner when we have done with him.

The higher the reward at the end of a man's time, the greater the inducement for him to serve it out and the higher the standard of his conduct during his career. An idea of the district areas is sketched in Chart No. I.

From the data already given we would advocate that—

1. Every possible inducement should be held out in order to increase the entry of the fishermen and coast trade into the permanent reserve.
2. Every encouragement and assistance should be given to the merchant training system, and entry from them into the reserve.
3. The establishment of a permanent volunteer "Torpedo defence corps," with a company in every port in the United Kingdom.

We believe that, with such an organization, in an efficient state, on the sudden breaking out of a confederate war against Great Britain, we should find abundance of good men to man our ships of war and utilized merchant steamers, fight our guns and explode our torpedoes, whenever the enemy should dare to threaten our homes and national independence.

CHAPTER V.

General Remarks.

We have hitherto purposely omitted to go into any minute detail of the systems of education which obtain in Foreign Navies, for two reasons. First, the limited space allowed for this essay has been almost taken up in dealing with the origin, growth, and improvement of our own system; and secondly, that as they are for the most part models of our plans, we gain little information of any value, however closely we may study them. It is, however, desirable to notice the main features in the systems of the more important nations.

An excellent summary of the "General character of the French

"system" has been published in the report of Professor Soley, U.S.N., and we know of no better work to which we can refer students of "Naval education." He admits that they are open to the fault of "too much system," and states that it is the effect of "extreme centralization."

"The broad features of the French system of Naval education consist in a unity of purpose underlying the whole plan; a rational organization, with a distinct perception of the ends in view, and an adaptation of means to reach the ends proposed; the exaction of a high standard of preparatory training; and great originality, freedom, and thoroughness of instruction."

This high praise, coming from an independent witness who had made a diligent search after truth before forming this opinion, must carry weight, though by no means agreed in by all.

Captain Hore, R.N., in his evidence before the Committee, 1870, said, "That while the English had no system of Naval education, the French had too much system." And Captain Sherard Osborn, at the same date, said, "I see the ill effects of over-training in French Officers, who all appear to me to be brought up in one groove, and to think each very much like his neighbour, and when they rise to the higher grades, they see (as a French statesman remarked to me) very little farther than their epaulettes."

On the whole we find that the French system does not differ so widely as these witnesses would lead us to suppose (in its main features) from our own.

They have competitive local examinations for admission followed by a three years' course of theoretical and practical training. The first two in the "Borda," which answers to the "Britannia," and the last in a sea-going practice ship, with review and completion of the course, in the theory and practice of subjects purely professional.

They are then drafted to sea-going ships and their scientific education ceases.

In conclusion, Professor Soley remarks that "There is a decided need at present of facilities for higher education in the branches which particular inclinations may lead individual line Officers to take up. It is not unlikely that such a higher College, similar in purpose to Greenwich, may in time be established."

In the training of the men in France, the methods differ considerably from ours. They have schools for each of the branches of the Service, the young men selected from the barracks being first passed through the "Bretagne," a large line-of-battle ship in which there are usually from thirteen to fourteen hundred under instruction. The "Bretagne" course lasts about five months.

TABLE No. 15.—*Showing what is considered to be an efficient provision of Officers and Men, including the Reserves, in France.*

	Ashore.			At Sea.			In the Reserve.			In the Colonies.		
	Officers and others having the status of Officers.	Warrant and petty Officers, seamen, and em-ployes not having the status of Officers.	Total.	Officers and others having the status of Officers.	Warrant and petty Officers, seamen, and em-ployes, not having the status of Officers.	Total.	Officers and others having the status of Officers.	Warrant and petty Officers, seamen, and em-ployes not having the status of Officers.	Total.	Officers and others having the status of Officers.	Warrant and petty Officers, seamen, and em-ployes not having the status of Officers.	Total.
Attached to the Ministry at Paris ..	220	40	260	..	..	..	..	..	..	..	..	260
Depôt of charts and plans ..	16	8	24	..	..	..	..	..	..	..	..	24
<i>Officers and Men on General Service.</i>												
Line Officers ..	778	..	778	980	..	980	32	..	32	..	..	1,790
Professors ..	..	..	..	14	..	14	..	..	..	..	..	14
Marine Engineers ..	124	..	124	5	..	5	..	..	..	..	..	129
Hydrographic Engineers ..	14	..	14	3	..	3	..	..	..	..	..	17
Paymasters ..	310	..	310	106	..	106	7	..	7	..	..	423
Surgeon's corps ..	404	..	404	191	..	191	5	..	5	..	..	600
Chaplains ..	8	..	8	16	..	16	..	..	..	..	..	24
Engineers ..	22	..	22	31	..	31	10	..	10	..	..	63
Clerks, &c., of the Commissariat ..	108	108	216	233	233	466	19	19	19	..	..	360
Ships' crews ..	8,436	8,436	16,872	25,638	25,638	51,276	1,607	1,607	1,607	..	..	35,683
Marine Veterans ..	2	1,624	1,626	..	..	..	..	..	..	..	..	1,624
Pupilles de la Marine ..	..	500	500	..	..	..	..	..	..	..	..	500
Total ..	1,662	10,668	12,330	1,346	25,871	27,217	54	1,626	1,680	..	..	41,227

TABLE No. 15—continued.

	Ashore.			At Sea.			In the Reserve.			In the Colonies.			Totals.
	Officers and others having the status of Officers.	Warrant and petty Officers, seamen and em-ployes, not having the status of Officers.	Total.	Officers and others having the status of Officers.	Warrant and petty Officers, seamen and em-ployes, not having the status of Officers.	Total.	Officers and others having the status of Officers.	Warrant and petty Officers, seamen and em-ployes, not having the status of Officers.	Total.	Officers and others having the status of Officers.	Warrant and petty Officers, seamen and em-ployes, not having the status of Officers.	Total.	
<i>Troops.</i>													
Marine infantry ..	419	9,902	10,321	.. 2	..	..	..	..	..	279	6,981	7,260	17,581
Marine artillery ..	297	3,241	3,538	..	..	..	..	..	..	46	1,142	1,188	4,728
Gendarmes ..	18	604	622	..	..	..	..	..	..	..	..	..	622
Compagnie de discipline ..	1	29	30	..	..	..	..	..	..	4	117	121	151
Reserves (infantry, 282; artillery, 61) ..	..	343	343	..	..	..	..	..	..	..	..	..	343
Total ..	735	14,119	14,854	2	..	..	..	..	..	329	8,240	8,569	23,425
<i>Various.</i>													
Inspectors ..	32	..	32	..	..	..	..	..	..	..	..	..	32
In charge of works ..	387	230	617	..	..	..	..	..	..	17	..	17	634
Accountants ..	..	630	729	..	..	..	..	..	..	21	..	21	750
In charge of bakeries ..	11	..	11	..	..	..	..	..	..	..	..	..	11
Examiners and Professors in Nautical Schools ..	32	..	32	..	..	..	..	..	..	..	..	..	32
Engineers of bridges and roadways ..	62	..	62	..	..	..	..	..	..	2	..	2	64
Commissary clerks ..	645	..	645	..	..	..	..	..	..	4	..	4	649
Maitres principaux ..	65	..	65	..	..	..	..	..	..	..	..	..	65
On various services ..	7	..	7	..	..	..	..	..	..	..	..	..	7
Total ..	1,340	860	2,200	..	..	..	..	..	..	44	..	44	2,244

TABLE No. 15—continued.

	Ashore.			Sea.			In the Reserve.			In the Colonies.			Totals.
	Officers and others having the status of Officers.	Warrant and petty Officers, seamen and em- ployes, not having the status of Officers.	Total.	Officers and others having the status of Officers.	Warrant and petty Officers, seamen and em- ployes, not having the status of Officers.	Total.	Officers and others having the status of Officers.	Warrant and petty Officers, seamen and em- ployes, not having the status of Officers.	Total.	Officers and others having the status of Officers.	Warrant and petty Officers, seamen and em- ployes, not having the status of Officers.	Total.	
<i>Department of Maritime Justice.</i>													
Commissioners and Judge Advocates	9	..	9	..	..	..	..	..	..	..	..	..	9
Clerks	18	..	18	..	..	..	..	..	..	..	..	..	18
Watchmen .. .. .	..	40	40	..	..	..	..	..	..	..	..	..	40
Prisoners .. .. .	..	850	850	..	..	..	..	..	..	..	..	..	850
	27	899	926	..	..	..	..	..	..	..	..	..	926
Total in the Naval Service ..	4,134	56,061	60,195	1,348	25,871	27,219	54	1,626	1,680	373	8,907	9,280	98,374
<i>Colonial Service.</i>													
Officers and agents of the civil service .. .. .	..	..	..	..	..	..	..	..	..	747	146	893	893
Officers, non-commissioned officers and soldiers (infantry, artillery, gendarmerie) ..	..	..	..	..	..	..	..	..	..	195	2,843	3,038	3,038
Connected with prisons ..	..	..	..	..	..	..	..	..	..	195	652	847	847
Total on Colonial service proper ..	..	..	..	..	..	..	..	..	..	1,137	3,641	4,778	4,778
General Totals	4,134	56,061	60,195	1,348	25,871	27,219	54	1,626	1,680	1,510	12,548	14,058	103,152

The boys' training ship is the "Austerlitz," on board of which there are about 800 boys who are entered at thirteen or fourteen, and are kept until sixteen, and then enter the "Bretagne" as recruits. These ships are at Brest. There is also a school similar to the Greenwich Hospital school, in which 400 sons of sailors, taken in some cases as early as seven, are educated for the Navy. The schools for specialists, to which the novices are finally distributed, are the gunnery school at Toulon, the school of musketry at Lorient, and the two cruising frigates for the instruction of topmen and Quartermasters.

There is also a torpedo school, a school for coast pilots, a normal school for naval schoolmasters, a school for firemen and machinists, for dockyard apprentices, and a school for gymnastic instructions.

Their system of recruiting dates back to 1665 in the time of Louis XIV, when the clumsy system of closing the ports and making a general press of all the seamen required was set aside by a decree; and all seafaring men were ordered to be enrolled and divided into classes. The present system consists of voluntary enlistment, and the "Inscription Maritime," and if the numbers from these sources are not sufficient, the remainder are raised by conscription. For a detailed account of the changes from first to last, we would refer students to an interesting article in the "Revue Maritime," 1864, and for a full detail of the present system of training in France to the report made by Lieutenant Commander Chadwick to the Secretary to the Marine Department, 1879.

In the German Navy things are naturally on a smaller scale; for instance, their Lieutenant's list is ten per cent. of ours, but it is generally conceded that what is attempted in the way of efficient education is extremely well done. The standard for admission is high, and successful candidates are appointed cadets and sent on a practice cruise of six months. They then have a course of six months' scientific and professional subjects; they then pass for midshipmen and have a month's gunnery at Wilhelmshafen, then round the world for two years in a practice ship for theoretical and practical training, the *Officers of the ship* being the instructors. After this cruise, examination again, and then a curious, but valuable test of election where the unpromising are rigorously weeded out and sent about their business. All Officers then have a year's course in professional and scientific subjects, steam, fortification, &c., at the Naval School; then comes the professional examination, and this ends the compulsory course. A further and still higher course of three years is open to Officers who choose to take advantage of it.

About three or four years ago, Captain Shering's plan for training boys for the Naval Service was adopted; 140 boys are enlisted every year from about 500 who present themselves. There are now something under 560 boys under training to fill the seaman waste in a force of 6,000 men. Naturally, from so large a supply for so small a demand, the recruiting Officers are able to pick and choose with great care. The age of entry is from fourteen to seventeen years, and the

term of engagement twelve years. The method is alternative, sea and harbour.

First six months, summer cruising in brigs with carefully selected Petty Officers. Second six months, barracks on shore, instruction in Military part of training and study.

Next eighteen are spent in cruising ships of the "Nymphe" class. The same Officers are sent with the boys, and they are kept constantly busy at drills and examinations, in fact receive a first class practical training. The last six months are spent at Kiel at gun instruction, after which they pass for able seamen. Having regard to the present strength of the German Navy, a very large proportion of the fleet in commission is detailed for training purposes. Two brigs cruise with the young boys in the Baltic, two corvettes in the Baltic and North Sea respectively; the "Nymphe" extended cruising; the frigate "Niobe" is employed as a training ship for cadets, and four ironclads are formed into a squadron for evolutionary exercises. Thus the training of seamen for war purposes is taking a prominent place in the minds of the German Government, who recognize the important fact that the principal use of war ships in peace time is to train men for war service.

The age of entry in Russia is never less than fifteen and may be as high as eighteen. Candidates for admission into the Russian Navy must be the sons of hereditary noblemen, of staff or superior Officers, civil or military, or of hereditary honourable citizens. They are admitted on petition after medical examination, and if they wish it are allowed to go to sea for a six months' trial cruise. They then enter the Naval School for a few years' course of education, the expense of which is defrayed by the Government, then examination, and between nineteen and twenty-three they are rated "Gardes-Marines"; then two years in special training ships, on distant cruises and examination in seamanship. They then become Officers. The Russian Government having given these young Officers an ample training extending over a period of six years, affords no further direct educational assistance, nor do their ships carry any Naval Instructors.

The system of training in America and the number of Officers and men trained are constantly changing, but can scarcely be said at any time to be adequate to the maritime business of the country.

The school is at Annapolis; the number of midshipmen allowed being one for every member and delegate of the House of Representatives and eleven appointed by the President. Total about 300. The age of entry is from fourteen to eighteen, and candidates are bound to serve for eight years.

The course is scientific, professional and practical; it lasts four years, the students being sent to sea in the summer in sea-going cruisers for instruction in practical seamanship and navigation. After this course, students commence their Naval career.

In Italy, there are two schools consequent on the union between
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Sardinia and the two Sicilies. One is at Naples and the other at Genoa. Since the amalgamation, the Naples school has become preparatory to that of Genoa.

The age of entry is from thirteen to seventeen, and the course lasts four years, two at Naples, and two at Genoa. There is a school of gunnery established at Spezia in 1873, on board the "*Maria Adelaide*," for Officers and men.

There is a Torpedo School on board the "*Caracciolo*" for Officers and men, and also a well organized school for Engineer mechanics established at Genoa in 1862.

Before closing this essay we would say a few words on the "decadence of seamanship in the Navy," which has been periodically written about and talked upon.

We believe that the element of seamanship holds as high a position among the Officers, and especially the rising generation of to-day, as it has ever done in days gone by. Clever articles were written condemning the seamanship of the Navy, when the "*Eurydice*" was capsized, and again when the "*Atalanta*" foundered in a gale in the West Indies.

The real fact of the matter is, that considering the enormous number of vessels we have knocking about, the wonder is we have so few losses in the present day.

It is only necessary to look through the Admiralty Records of what became of our ships during the last and earlier part of this century in order to get a loss of about one vessel every fortnight. The absence of the electric telegraph and penny press prevented these accidents from reaching the heart of the community, and it is a curious fact that on the 17th October, 1780, or 100 years before the loss of the "*Atalanta*," a whole squadron, including the "*Thunderer*," 74, "*Stirling Castle*," 64, "*Defiance*," 64, "*Phoenix*," 44, "*La Blanche*," 32, "*Laurel*," 28, "*Shark*," 28, "*Andromeda*," 28, "*Deal Castle*," 24, "*Penelope*," 24, "*Scarborough*," 20, "*Barbadoes*," 14, "*Chameleon*," 14, "*Endeavour*," 14, and "*Victor*," 10 guns, was lost in the same storm in the West Indies.

Had the "*Eurydice*" been fitted with rope rigging, probably the loss of her masts would have been the only result of having been exposed to one of the heaviest squalls that ever blew.

That we require self-education and diligent search after seamanlike knowledge is an undisputed fact, but we venture to assert that with the scientific and practical tuition suggested in these pages it is an Officer's or man's own fault if he is not efficient.

We have kept in this essay to the present system, merely suggesting changes in detail to meet the requirements of the day, for we consider that needful reforms, carried by the opinion of the majority, are of the utmost benefit. But we should be sorry to see the question of Naval education handed over to factious, peevish, and perverse spirits given to change, who have always discovered a greater regard for their own private fancies and interests than to that duty they owe to the public.

No one denies that changes and improvements are necessary :

Tempora mutantur, &c. We live in times of progress. The mystery of yesterday is the commonplace of to-day. Electricity, which seemed miraculous and was looked upon with awe a few years ago, is now the plaything of children, and boys are turned back for not being thoroughly conversant with that of which it would have taken our forefathers a life-time to understand the merest outline. Everything is moving onward, swiftly and satisfactorily.

Amongst changes then so great and so hopeful—amongst the discoveries and inventions of the day (first looked upon as a work of inspiration, secondly as a science, and lastly as a mere trick of acquirement which must be known to all) it may be doubted, if the great fathers of seamanship could come back to us, whether they would find their hard-earned knowledge of any use to them, in the ordinary dangers inherent to a sea life, or in an action on the open sea. Let us be thankful for the skill and talent we have at present, and realize the importance of its improvement, and we need have but little fear for its future efficiency.

In conclusion, we must say how sorry we are that the space allowed has prevented us from going as deeply into the subject as we could wish—even now we may say with Dryden—

"Thoughts come crowding in so fast upon me
That my only difficulty is to choose or reject."

and again with the same author—

"The remnant of my tale is of a length
To tire your patience."

Should we never see nor hear of this essay again, we shall at least be indebted to it, and to this Institution, for what we have learned while composing it.

"Et si de l'obtenir, je n'emporte le prix
J'aurai du moins l'honneur de l'avoir entrepris."

LA FONTAINE.

ESSAY.¹

THE BEST METHOD OF PROVIDING AN EFFICIENT FORCE OF OFFICERS AND MEN FOR THE NAVY, &c.

By Commander HUBERT H. GREENFELL, R.N., H.M.S. "Phoenix."

"A Safeguard to our Most Gracious Sovereign and Her Dominions."

SURELY there is no question which touches so closely the honour and welfare of Great Britain as the condition of our naval forces. The enormous increase in the wealth of the country, the almost daily expansion of our seafaring trade, the growth of our Colonies, all point to the necessity of giving earnest heed to all that relates to the efficiency of the Navy. No questions ought to command a more wide-spread interest, none ought to be debated with a keener criticism, than those which affect our seamen and our ships. More than ever is it imperative that our empire of the sea should be beyond question, and that our naval forces should be organized not only on a fairly good system, but on the best of all possible systems.

The languid attention which is given to naval questions both in the press and in our Legislative Houses is sadly at variance with the interests involved. Is our empire of the sea, on which we were wont to pride ourselves, and on which—however little we may recognize it—the very existence of the State depends, as assured as it ought to be? Our wealth, our responsibilities, our weak points have increased in a high degree. Has the development of our Navy, either in organization or numerical strength, kept pace with them? The rise and rapid growth of the second-class navies of the world form a new element of danger our forefathers had not to reckon with. Is it not time to give an adequate consideration to the question, whether our house *is* in order—whether the strong man *is* armed to keep his goods?

The question as to whether our Navy is as strong numerically as it should be has an obvious bearing on the subject of the essay. To those who, like myself, think the Navy is very far from being in point of numbers what it ought to be, consistently with even ordinary conditions of safety, it is most unsatisfactory to construct a scheme dealing with its present basis. But this much may be said, that if it were decided to give that increase to our Navy which the necessity of the case demands, there would be no difficulty in finding the men to man the ships. We still occupy in that respect the first position in the world. We have the best material and in the greatest quantity. Notwithstanding the stated increase of foreign seamen in our Merchant Service, our maritime population is as great as ever; indeed,

¹ Honourably mentioned.

greater than ever. The better fare, wages, and treatment attract foreigners into our Mercantile Marine, and the boys who would have taken their places go to other and perhaps better paid work; but if the permanent strength of our Navy were to be doubled, I for one do not doubt that we should find the boys and men for our ships, which is more than any other nation, with the exception of perhaps France, could do.

It should not be forgotten that whilst any great development of our military system is looked upon with great jealousy and suspicion, the case with the Navy is altogether different. To largely increase our land forces—to the extent advocated by many writers—is simply to add to the burdens of the State, without reaping any corresponding advantages. A great development of the military instinct amongst us would at best be a hazardous, and perhaps dangerous experiment. A soldier is a fighting machine, pure and simple. His training fits him for that, and that alone. He is taken from industrial life and trained to work which—whatever may be its moral influence—is of no manner of use to him afterwards. The man-of-war's man, on the other hand, makes a profession of the sea, and passes the better part of his active life in it. The very nature of his career fits him when he leaves the Navy to take a useful part in the innumerable occupations which are connected with our position as the great maritime nation of the world. Why do so many of our ten years' men leave us? Simply because they find no difficulty in getting employment in better positions than we at present offer them. It may be that an effort should be made to keep these men by offering them greater inducements to remain; but the State generally cannot but profit by the passage to the ordinary avocations of life of this number of well-disciplined, orderly, and intelligent men. The London fire-brigade is a case in point.

Unless I were to endeavour to forecast the general scope of our naval policy on the occasion of any war involving naval operations on a large scale—which would be out of place in the present essay—it is impossible to arrive at an estimation of the actual numbers of men we should want. The various Committees and Commissions which have dealt with the subject afford but little information, as the whole condition of affairs is changed; but even if it were thought necessary to go as high as the figures voted for 1812—145,000 men—I maintain that we could produce them, and that no other nation in Europe, except again France, could. In Germany, for instance, fully one-third of the small contingent for the Navy has of late had to be drawn from inland provinces; men, the mass of whom has never even seen the sea. Whether we get the right sort of youths in sufficient numbers depends how we bait our hook, but they are there if we want them.

It may be suggested that any notable increase in our Navy would merely lead to a similar step on the part of other Powers, and beyond the additional expense, we should be no better off; but our case is altogether different to theirs. We are free to throw our chief strength into our Navy, whilst they are not. With other nations the needs of their military organization must have the precedence, and the strain

in men and money which these needs already demand precludes the possibility of any large increase to their Navies.

In short, as far as the actual number of men needed is concerned, if we decide first what number of ships we require, there would not, to my thinking, be any difficulty in getting the men to man them. Ships are not built in a day. The process of raising and training men could well keep pace with even the most accelerated increase to our ships.

Without overlooking in any degree the advantages inherent to the possession of mere numbers of ships and men, I do not think too much importance can be attached to the question of the efficiency of our *personnel*, which, in my opinion, holds the first place.

We have, as I said, the finest materials in the world to work upon; but we are far, I think, from getting the best results out of them. Let me dwell again upon the importance of our possessing not only a fairly good system of organization and training, but the very best system. Our Navy should be the model in this respect, to a far higher degree than it is at present, to which all other navies should aspire. No other nation possesses to the extent we do the maritime instincts, the love of the career, the seamanlike qualities, which are the primary essentials; whilst our widespread interests throw such an amount of work upon our Navy, that we are able to give our Officers and men a practical training, which other nations may envy, but are unable to attain.

Officers.

The question of entry and training of Naval Cadets is one which has given rise to a considerable amount of discussion in the Service.

Standing on the very threshold of any consideration as to the efficiency of the Officers of the Service, the problem of giving a suitable training to our young Officers is one which affects the whole tone, discipline, and efficiency of the Service in the highest measure.

The present system stands condemned by an overwhelming mass of opinion, both as to its scientific results, and also in a higher degree as to the standard of practical knowledge of seamanship which it produces.

As to the scientific attainments, some failure in this respect may not be of much moment, but any falling off in what is known under the general term of seamanship most vitally concerns our position as a naval Power, and demands our most earnest consideration in providing a remedy.

At various times of late years the inadequacy of the training we give our young Officers has been noticed, and other schemes proposed. As a rule, these proposals have had for their object the introduction of a better class of boys, and a higher standard of education in general and scientific subjects.

One distinguished Officer, actuated by a laudable wish to get the best material possible for the Service, proposes an arrangement by which the pick of our public school boys are to be gathered into the Navy. Another, dwelling upon the poor educational results of the present system, asks that the age of entry should be raised so as to enable boys to get a better hold of education before they come to sea.

It should, however, be remembered that the Navy offers but few prizes to boys of much intellectual promise, and every day even these few are becoming more and more a matter of chance and luck. It may be all very well to offer a considerable portion of our cadetships to the public, but the parents of boys who give promise of brains might be expected to hesitate before accepting a nomination for their boys.

On the whole we do not want a high average of intellect in the Navy. The monotonous conditions of a naval life, the long absences from home, the necessary periods during peace-time of comparative idleness, are not in favour of intellectual growth and activity. Many men of marked talent find a sea life insupportable, and leave it for more congenial work on shore. Without on the other hand accepting the old tradition that the "fool of the family" finds his proper place in the Navy, there is this truth in it, that a high range of intellectual power is not, as a rule, desirable. The average class we get, make by no means on the whole the worst Officers. They are contented with their lot and, possessing the usual qualities of English gentlemen, command the respect and obedience of their men. It is by no means certain that men of a much higher average of intellect would possess the same amount of tact and skill in their dealings with their inferiors; the evidence is rather the other way.

To desire that our young Officers should be better grounded in the subjects of general education before they join the Navy is a commendable object in itself, but those who rest their demand for a later entry of cadets on this ground are met by the time-honoured argument that seamanship can only be learned by a very early entry, and the question is obscured by its becoming a discussion between the advocates of better scientific education on the one hand and of practical seamanship on the other.

I share to the full the belief that the three essentials for a naval Officer are: seamanship, seamanship, seamanship. Practical life at sea is the essence and touchstone of our naval supremacy. Having had the opportunity of examining most of the foreign systems, I am more convinced than ever of the paramount importance of that readiness, judgment, training of the eye and head, which nothing but a life spent at sea can give. Practical seamanship, in a word, is the essential of essentials. "What an Officer requires is a stout stomach," a most just and true remark by, I believe, the late Admiral Sherard Osborn, comprehending the whole requirements of a naval commander.

It is notorious that our Officers, as a rule, are considerably behind those of several Continental Navies in scientific acquirements; but whilst I think there is no reason under a proper system that this should be so, I should not look upon this inferiority as presenting in itself any real element of danger, so long as I could feel assured that our pre-eminence in practical seamanship was so marked as to outweigh this disadvantage; but if the present system of entry and training is responsible for a serious and unavoidable decline in seamanship, then I think the question becomes one of the highest importance to

us, and no efforts should be spared to alter arrangements which are producing so lamentable a result.

What is the argument of those who still stand by the system of entry at the present age? Simply that the groundwork of practical seamanship, in which they include knowledge of the men and skill and tact in handling them, is only to be learnt when young.

We are all familiar with Falconer's admirable picture of the almost child handling a ship—

"And well the docile crew that skilful urchin guides."

It would be useless to look for the same thing now. Our urchins, we must confess, are not skilful. It is quite certain, however, that the Naval Instructor was never heard of in Falconer's days.

Another well known Officer appears to advocate the retention of early entry, mainly on the ground that a sea life turns sickly lads into healthy ones; but I presume that on the face of it, it would be better to start off in the first instance with thoroughly healthy lads, of whom, thanks to our general school system in England, there is assuredly no lack.

If it can be shown to the advocates of the early entry that the very object they have in view and hold of supreme importance—the practical training for a practical life—is thwarted and defeated by the fact of early entry itself, it ought to go a long way towards gaining their voices in favour of a much-needed change.

However admirable on the whole early entry may have proved in days gone by, it is impossible to overlook the fact that in the present day the whole standpoint of general knowledge has been greatly raised, and unless our Officers are to become mere boors in comparison with the great average of culture on shore, it is impossible to cut short a lad's education at 14, and throw him entirely into the practical work of his profession.

The old system produced admirable Officers because they could devote their whole attention to acquiring a knowledge of their practical work as seamen. They had, as a rule, that to learn and that only, and it is not surprising that they became such experts, but a mere enumeration of the subjects of which some degree of knowledge is essential in the present day will show how impossible a continuance of that system must be. In those days steam was unknown, electricity and torpedoes were unknown, and gunnery in the modern meaning of the word was unknown, and they were consequently able to get the full benefit of a constant and undivided attention to seamanship.

In the present day then, if the age of entry is to remain what it is, a lad's general education must be carried on; but if there is one point on which all professional opinion, civil and executive, is unanimous, it is the impossibility of associating together the condition of school-boy and Officer. Both must suffer, and both do suffer, in a high degree, but the ever-increasing demands for scientific training do, under the faulty system of jumbling the two together, produce this result, viz., that training in practical seamanship is thrown year by year more into the background, and this is a condition of things which

in my opinion is so deplorable as to justify at all risks a change from our present system.

Those who oppose a later age for going to sea—say at 16—do so on the ground that the years between 14 and 16 are all-important in introducing a youngster to practical seamanship. A few years ago this might have been the case; but what are the facts now? Owing to the necessity of putting all midshipmen on an equal footing, as regards training, under a Naval Instructor, they have been removed from those classes of small vessels in which nine-tenths of the sea work of the Navy is carried out. What is the proportion of all the midshipmen in the Service who are locked up either in flag-ships, where in some cases they swing round a buoy for many months in each year, or in ironclads? The large number of midshipmen now borne in such ships intensifies the difficulty of giving them all a fair chance of learning their work aloft or in boats. One flagship carries twenty midshipmen, another seventeen, a third sixteen; how are all these boys to get any practical value out of their time spent in these ships? Is it to be maintained that crossing royal yards in harbour is any substitute for the real sea work of olden times, or even for what is to be found in small craft in the present day? Is it at least of so much importance that it is worth while, for the sake of it, to make a confusion of the whole training time of a youngster, instead of letting him pass those two years on shore, then coming fresh to practical work, and nothing but practical work? What can be the ultimate practical value of the *seamanship* training in these ships, when many midshipmen who have passed their time in them and come up for examination have to confess that they have never seen a ship put about under canvas?

As a matter of fact the two things are incapable of association. With the early entry as it is, and the examinations as they are, all that was most valuable in the old methods of training is starved out. Seamanship in its real sense must go to the wall, and does go to the wall to an extent which I believe is becoming a positive danger to the position of the Service.

There is no escaping the facts of the case. If our naval supremacy rests on our capabilities as practical seamen, and if this supremacy is to be maintained, the present system of early entry must be given up. The rough work of general education must be completed in some way or other before boys come to sea, and, when they come to sea, their training as Officers and seamen must be undivided, continuous, and thorough.

The scheme brought forward by the Earl of Dalhousie in his able and practical speech in the House of Lords was based upon a recognition of these facts. He took his ground upon the real and only sound reason for change—the urgent necessity for improving the present methods of training in practical seamanship. With the details of his proposal I am not here concerned; I only plead for a recognition of the fact that if the best and most important feature in our naval training is to be preserved, a change is absolutely imperative.

To reply to the demand for better instruction in practical seamanship in the present day, that under the old system many Officers reached a distinguished position in scientific knowledge, reminds one of Scribe's—

“Quand je lui parle—Roi,
Il répond—Cardinal.”

Under any system, even under no system, there will always be a certain percentage of the whole number of boys brought into the Service who possess the ability and industry to make for themselves, later on, a name in some branch of service. If the net is cast abroad it may bring in many dunces, but it cannot fail to catch here and there a really clever boy; but this fact does not in any way help us towards providing a remedy for the admitted decline in practical seamanship which exists in the present day. The distinguished Officers to whom reference is made, started off with a thorough grounding in their practical work, and could subsequently employ their leisure time in those branches of knowledge for which they possessed a special bent; but the loss of that early training in seamanship—which it cannot be too often repeated is the danger of the present system—cannot be replaced later in life. I do not fear any falling off in the number of men who will gain a well-marked place in science, but I do apprehend that, unless some steps be taken, the knowledge of practical seamanship which accompanied it will in the future be found wanting.

If it were possible to re-establish the old order of things, I so far believe in preparing as early as possible for the exceptional nature and duties of a naval life, that I would willingly assent to boys being *sent to sea* at 13 and 14; but it is evident that this is impracticable in the present day. The old order has changed—little as we may like it—giving place to new.

The existing system endeavours to provide for the new condition of affairs by keeping youngsters practically schoolboys till 19, and the decline in seamanlike knowledge is the inevitable consequence.

Between the old system of giving little else than training in practical work, and the modern one of reducing that training to a minimum, a mean must be found. We must ask ourselves—looking to the level of qualifications which a naval Officer should possess; recognizing the impossibility of carrying on, to any real result, the two branches of training concurrently—what is the age at which we can afford to consider a lad's scientific education sufficient as a *general average* for our purpose, and make the chief object thenceforward the training in the practical work of his profession? I am far from meaning that a boy's general education should cease altogether at that age, but I see no alternative, unless his training in practical work is to become every day less and less, short of giving the required knowledge of the general subjects of education before the practical training commences.

The question may be stated in two ways. What is the earliest age consistent with attaining a fair standard of general knowledge at which we can start a lad into the practical work of his profession?

And what is the latest age at which a boy can actually go to sea with a hope of acquiring those seamanlike habits and instincts which are all-important? The alternative is a difficult and a hard one; but I, for one, if anything is to be sacrificed, would rather give up some portion of the standard of scientific culture which could be reached—I do not refer to the present standard, because that is admittedly very indifferent, but to that which could be reached by keeping lads at their studies till 17 or 18.

Of the two I do not think we require a very highly educated body of Officers. The conditions of a sea life are—as I have said—in the main tedious to a degree, which would make them especially irksome to a very scientific corps of Officers. There would be an increasing tendency to look for employment on shore. What we want is good common sense, judgment, a stout stomach (as before), and men content to pass the greater part of their lives away from home and its pleasures, often in exceedingly tiresome places and unhealthy climates. The mass of the work we have to do calls for no great exercise of the higher powers of the mind, and it will always be so.

Thinking this, I should be inclined to fix the age at about 16 or 16½ at which boys should pass out of the Naval Training College and go to sea, and thenceforth I should make their training and examinations strictly professional.

But I think it highly desirable that boys should commence their preparation for the Navy at quite as early an age as they do at present. Nominate them at 12 for entry into the Naval College, the standard which they could reach in four or four and a-half years of careful training in a well-conducted establishment would be far higher than they now reach at 19 and 20 under the combined system of "Britannia" and Naval Instructors afloat. The training in the scientific subjects required in the Navy is an excellent general education in itself, comprising mathematics, astronomy, natural science, &c., to which would be added modern languages. I do not doubt that under good instructors a very satisfactory and sufficient standard would be attained. Then let the boys go to sea and have plenty of practical work, not in ironclads, but in the cruising squadrons and small craft, especially the small craft, where they would again, as formerly, often be placed in positions of responsibility and trust, watch-keeping, boat work, and the rest of it. They would not see an opera so often, but they might well be expected to have seen a ship tacked before they came to man's estate.

It is to some such compromise as this that we shall have to come. It is no use saying that things go pretty well as they are. The condition of affairs is now eminently unsatisfactory, and has been so declared by the greater number of the leading members of the profession. Moreover, as I said at the outset, the English Navy is not one which can afford to put up with anything short of the best system which can be devised. The actions of those foreign nations who have adopted a much later entry than ours furnishes—as has been firstly pointed out—no guide to us, for as a rule they have had no choice in the matter. They do not possess ships, nor with their limited Naval

Budgets can they afford to give their young Officers an adequate practical training. Hence they give them what they can, namely, a thorough scientific training on shore, and for this, late entry is preferable to early. Their weak point is undoubtedly the lack of practical seamanship, but do not let us rest content with the poor satisfaction that we are at all events as good or better than they are in this respect. The condition of safety for our Empire is that our naval strength should be pre-eminent, and admitted to be so.

If I have dwelt at some length on the subject of the entry and training of Naval Cadets, it is because I think it one which touches very closely the question of the ultimate efficiency of our Officers. If the lads are not the *élite* of the boyhood of the country, they are at all events of the class we want, and have the making of good Officers and seamen in them. It only remains for us to train them properly.

I trust that I may not be held to undervalue the advantage of high scientific culture. By all means give the opportunity to boys of exceptional capacity to pursue any of the higher subjects they feel inclined for. That opportunity now exists in the shape of the College at Greenwich. All I mean is that I fail to see how high scientific training can be combined with thorough instruction in practical seamanship, and of the two the latter is by far the most important. The system under which they are trained at present is, in my opinion, radically bad, the poor standard of scientific knowledge which they reach is obtained by the almost complete sacrifice of practical training, and that to my thinking is a very great and even dangerous loss.

To recapitulate my arguments:—

- (i.) To send a boy to sea direct, as in the old days, is no longer possible.
- (ii.) The present system of part schoolboy, part Officer, has proved a distinct failure. The standard of scientific attainments is very low, and that of practical seamanship still lower.
- (iii.) All authorities are agreed that proficiency in practical seamanship is the most important quality in an Officer. Unless things are to be allowed to go from bad to worse in this respect, some partial reversion to the old methods must be brought about, that is, the required standard of general education must be reached before boys go to sea, and when they do so, it should be as Officers, to learn and carry out the actual duties of their profession.

The details of the scheme to give effect to this would have to be carefully considered, but in the main I would suggest something as follows:—

- (1.) Nomination at 12 or 12½ with the usual test examination.
- (2.) Four years in the Naval Training College.
- (3.) At the end of such a course the examination should, in my opinion, be final, and I think we could well afford to make it so. Under the present system, all the best authorities say that the standard

reached by the Sub-Lieutenants at Greenwich is no higher than that on board the "Britannia." Admiral Sir Cooper Key, Dr. Hirsh, Messrs. Laughton and Oborn, are emphatic on that point. In other words, the interval between the "Britannia" and Greenwich has produced nothing at all. But if we have at present to rest satisfied with the standard reached at Greenwich, which is virtually that obtained by two years in the "Britannia," where the average age of passing out may be put at 14 years and 9 months, there is every reason to believe that the standard which could be reached after four years of study with the average age of passing out at 16 years and 3 months, would be much higher, and sufficient to form a final test of a young Officer's general knowledge of such matters, and that he could thenceforth fairly do without a schoolmaster at his elbow.

The advantage of this arrangement would also be shown in the subsequent periods of study at Greenwich, which I should be inclined to make voluntary, except of course in the case of the special branches as at present, for boys who had been at school up to 16 or 16½, would have acquired such a hold on mathematics, that the higher education of the Navy might be expected to become something more than a mere name.

In order that the boys should go to sea as Officers, the four years at College should embrace such instruction in seamanship as is now given in the "Britannia," and the boys should be drilled in gun, rifle, and cutlass drill. The longer period of their stay at the College would enable all this to be done without interfering in the least with their studies. In most of the big schools drill is already a recognized part of the training. I would not examine the boys in either seamanship or drills, they should simply be instructed in them. The test for classification and position on the list should be their study work.

If a cruise in a sea-going training ship could be managed, by all means let them have six months in one when they pass out of the College. The only thing is to take care that it is a training ship. Do not let us repeat our last experiment in that direction. In six months of methodical teaching, an immense amount of practical instruction in seamanship can be given. Otherwise let the boys go direct from the College to sea-going ships, keeping them out of ironclads as much as possible, at all events at the outset of their career afloat.

Against any extra expense such a scheme would entail might be set the economy arising from the abolition of Naval Instructors.

The present condition of the Lieutenants' List is one which from the point of view of efficiency calls for some remark.

It is of course impossible, and undesirable if possible, that every Officer who joins the Service should rise through all the grades. But on the other hand, the effect on the zeal and perseverance of Officers, and particularly of young Officers, is most deplorable if the chances of promotion are so reduced as to become well nigh hopeless. A reasonable chance of succeeding in life is a necessary foundation for industry and energy. No body of Officers can long retain their efficiency, however great their sense of duty, if that chance is so deferred

that it practically is not worth counting on. In the words of a present member of the Board of Admiralty—

“Hope inspires, despair discourages, exertion.”¹

That this feeling is spreading among these Officers and extends even to the Sub-Lieutenants is unquestionable, and some steps should be taken either by the introduction of an intermediate rank, higher pay after certain service, &c., to remove it. This intermediate rank exists in some foreign navies. The Executive Officer in big ships and the next Officer who commonly has charge of the navigation, have both Commander's rank. The first is a Commander 1st Class, the other a Commander 2nd Class (*Capitaine de Frégate* and *Capitaine de Corvette*). There seems no objection to this plan.

On the other hand, a redundant list gives greater scope for selection and furnishes at once a thoroughly efficient reserve of Officers in case of the necessity for any sudden increase to the Navy in time of war. In a case of this sort, it would be possible to advance half the Commanders and probably some 200 to 250 of the Senior Lieutenants, a step in rank, not only without detriment but with advantage to the Service. They are men in the prime of life, of experience, and professional knowledge. As they stand at present, they form a cheap and efficient reserve; only if they are now fit for advancement, it seems hardly fair that they should have to wait for the outbreak of a war to get it.

The continually increasing age at which the average of promotions are made to the Commanders' and Captains' List, has, however, this element of serious inconvenience in it, that whatever may be the case in peace time, it is not desirable to have too elderly men to command ships in war.

“I am ready to fight now,” a Commander said to me lately, “and can still trust my stomach and nerves, but if I am only promoted at 40, what will be the case when I am commanding my first ironclad at 50?”

This is a question which demands attention.

The periods of half-pay which an excess in the lists over the requirements of ordinary service necessitate, are themselves a considerable impediment in the way of efficiency, especially as regards the younger Officers, though this has been remedied somewhat of late. At the same time, if these intervals only come occasionally, and are not too prolonged, they are not without some advantage to the general tone of the Service. Officers of foreign navies, where the service is continuous and without break, have expressed to me their regret that they had not an occasional stand off of six months or a year, during which they could refresh and improve their minds either by travel or in some favourite pursuit, or gain the advantage of mixing more in general society and shaking off for a time the routine of their lives. They alleged, and I think with reason, that they would be the better Officers for it.

There is one change which I shall mention here, as I think it will

¹ “Foreign Work and English Wages.”—T. BRASSETT, M.P.

have a direct and important influence on the efficiency of the Officers in command of our ships. It is this. The joint responsibility for the safe conduct in navigation and pilotage of a ship, which now is shared by the Captain and Navigating Officer, I would place solely and entirely on the Captain. In other words, I would abolish the navigating class as a class altogether.

Little as I am in favour of copying foreign systems, I do think that in this particular they have shot ahead of us. Imitating their example, I would in each ship make the third Officer do the subordinate navigating work—the charge of stores and instruments, the rating of chronometers, sight taking, &c., &c., and with due checks by other Officers' sights, he should be held responsible that these duties are correctly done, and that the results he furnishes to the Captain are accurate; but the entire responsibility for the navigation, and more particularly for the practical work of pilotage, I would impose solely on the Captain.

I would do this, moreover, not only because the Captain is the proper person to have this responsibility, and in the main even now has it, but still more strongly do I advocate it on the ground of the great increase it would give to our Captains' efficiency in the important respect of skill in handling their ships.

As matters now stand, the only occasions—on ordinary service—when a man's nerves are at all tried, is in the execution of some difficult piece of pilotage; and on such occasions it is the common practice for the Captain to be a mere spectator, whilst the work is being done by the Navigating Officer. Speaking as the Captain of a ship, I am confident that the habitual discharge of the duty of piloting one's own vessel—except in such cases where a regular pilot is indispensable—is a most excellent training to the eye and head.

Indeed, I am inclined to go further, and to make it incumbent on the Captain to do himself all such work, in taking his ship alongside wharves, in and out of cambers and docks, as is usually done for him by Queen's Harbour Masters and Masters Attendant in our own ports.

If he is not capable of doing such work now, how will he fare in any ramming combat, when the necessary nicety in handling his ship will be so great that, as Captain Colomb says, "the question of being rammer or rammeé will depend upon being half a ship's length before or behind a given spot at a given moment when proceeding at full speed"?

This may be considered too great a departure from the custom which prevails in the Mercantile Navy, but the cases are not alike. There all that is required of the Captain is to take his ship safely from port to port. In ordinary circumstances the power of being able to manœuvre with great precision under steam is neither necessary nor asked for.

Mishaps, it might be said, would frequently occur. I doubt it. Throw this responsibility on the Captains, and they will be found equal to the occasion. If a Captain cannot handle his ship on all occasions better than any one else, it shows that our Officers have not yet reached that pitch of efficiency, without which far more serious mis-

haps will happen in war time. But in any case, the few accidents which may occur will be far outweighed by the increased skill and confidence in handling their ships which would be the effect of the change.

If this were done, it would follow that all ships carrying a Commander, as second in command, might have a third Officer, also of Commander's rank, in charge of the navigating duties in the limited scope I have described. In the charge of stores and other duties which would devolve upon him, he would still find plenty to do. Is it too much to ask that all our Lieutenants who arrive at ten or twelve years' standing should be capable of rating a chronometer, taking an accurate set of sights, and working them out? and is it too much to expect that if they looked forward to having to do this work when their turn came, the mass of Lieutenants would not be found equal to it? I think not. If other navies do it, surely we can.

I advocate this change here solely on the ground of the effect it would have on the efficiency of the upper ranks of the Navy. There are other reasons in favour of it which cannot properly find a place in this essay. But this much may be said. It is a change which will probably, in any case, be found desirable before many years; for when the present Navigating Officers come to be promoted and command ships themselves, it is not likely that an Officer who has been navigating and piloting ships all his life will permit this important work, in which he has a direct and personal responsibility, to be carried out by a very much junior and very much less experienced Officer than himself.

There is one point which cannot be omitted in any examination of the conditions of efficiency of the Service. The prevailing system of frequent changes in command seems strangely out of harmony with true efficiency in the Captains, looking to the probable requirements of modern warfare with modern ships and weapons.

What is the least time in which a Captain could feel himself competent to handle his ship so as to ensure the utmost development of her powers of offence and defence? Bearing in mind Captain Colomb's conclusion before mentioned—to my mind a most serious, and, to some extent, alarming conclusion—the result of an exhaustive consideration of the problems of a naval action where ramming is resorted to, one may well ask—Is that time to be measured by months or years?

When one thinks of what such a ship as the "Inflexible" represents to the country in respect of money value and fighting power, one is almost forced to the belief that her Captain ought to have been born and bred in the ship. Can any man handle her as she ought to be handled who has possibly only been a few months in command?

The difficulties in connection with permanency of command are obvious to every one, but that this question should be entertained—as I understand it is—by an Officer of the highest rank, who is distinguished both for his professional experience and administrative capacity, shows at least how serious and important it is.

An Officer of rank said to me on one occasion—"Remember, that some day you may be one of forty or fifty men on whom the honour,

perhaps the very existence, of the country may depend." And his remark was just, for the Captain of an ironclad exercises a far greater influence over the issue of a naval action than the Colonel of a regiment can over that of a land one. With this tremendous responsibility before our Captains, what difficulties of arrangement ought to be allowed to stand in the way of ensuring the utmost efficiency in the command of our ships?

If, on the occasion of any great struggle, a serious disaster to our arms should arise from an imperfect acquaintance and experience with our ships on the part of the Captains, we are hardly likely to be presented on our return with the freedom of the City, even if the City of London has any freedom left to present. For myself, I think this is a matter which should be looked to in time.

The Men.

The question of the efficiency of our seamen is, to my mind, a very much more important one than their numbers. The strength of our naval position resides in our fighting fleet. Whether we consider our present number of ironclads sufficient for our wants, or whether a considerable increase should be given to them, so long as we have a sufficiency of men to man them, and to keep them manned, allowing for a certain percentage of casualties and sickness, this in the main is all that is required.

It is not possible to give a great increase to the numbers of our ships in a short space of time, whether ironclad or unarmoured; and, although a future naval war may see the employment on a large scale of armed merchant steamers, the number of men-of-war's men required for that purpose will not, on consideration, be found to be very large. Given then the number of ships in our fleet, and the number of men required to man them—without overlooking the necessity for having a sufficient reserve—our chief object should be to push the efficiency of the men we possess to the highest point attainable—to develop, in fact, the strength of our first line to the utmost.

A consideration of the probable character of a naval war will, I think, impress upon us the conclusion that success will be found to depend on the swiftness and force with which the first blow is delivered. The issue of the first serious engagement will probably decide the campaign; and it is with this view that I think too great importance cannot be attached to ensuring the very highest degree of efficiency in the *personnel* of our fleet.

The vast and terrible engines of war which we now possess demand an amount of skill and experience in their use which it is not possible to over-estimate. In a naval battle of the future the value of a skilled workman, whether he be Officer or man, will, in my opinion, be found paramount, and an overwhelming element of success.

This is a subject which I hold of prime importance. I do not hesitate to declare my belief, that the successful issue of a naval engagement will be found to depend, not so much on the possession of the most powerful ships and weapons, but on the skill displayed in their use.

The present system of training our men has grown up from a time when the conditions of service and the character of the work required of the men were altogether different. There are some points in it which, although the principles on which they are based are in the main sound, yet—owing to the changed condition of the Service—require considerable modification in order to attain the needful standard of efficiency; others, again, which are altogether unsuited to the present day, and urgently require change.

First of all, I think far greater care should be taken on the first entry of lads in examining their physique and general likelihood to become good and efficient men. Recruiting for the Navy is certainly a not less important matter—in my thinking a far more important one—than recruiting for the Army, and should be carried out on the same principles; that is to say, this duty should be performed entirely by naval Officers, who alone can have any interest in getting a good class of lad—sound, healthy, and intelligent.

I think the expense of this work would be amply repaid to the State by the smaller number of sickly, puny, and ill-conditioned lads who would be entered. The Officers engaged on this duty might be trusted, not only to enter such boys as presented themselves, but to look round for suitable lads for the Service; and the effect of the care they would have for the interests of their own profession would soon be visible in the improved standard of physique, intelligence, and conduct of our men.

It is beyond all question that we have at present considerable numbers of weakly and under-sized young seamen, many of whom seem to pass their career in moving about from station to station, being periodically invalidated every three or four years. The proportion of invaliding and sickness shown in the Medical Report on the health of the Navy points, in my opinion, to an unsatisfactory state of physique and stamina, especially when we consider the general light work, healthy occupation, and excellent diet of the Service. A troop ship recently brought out reliefs to a foreign station. On arriving at her destination, a large proportion of the men who came out were invalidated at once home again, and returned in the same ship. This is not a solitary instance. Taking my ship's company as a fair average sample, and I do not know why it should not be considered such, I find that over 16 per cent. have been invalidated in one year. Of those that are left, I am far from thinking that as a whole they represent in bone and muscle a crew that I should be able to rely upon in case of any really hard work. I will go farther and say that a good number of them would, I am confident, be quite incapable of a heavy and protracted strain on their bodily powers.

Part of this I think is due to want of care in their selection on entry, part to defects in the methods of training when they are entered.

I think it very much open to question whether the arguments which are brought forward in favour of retarding the entry of Officers, do not apply with equal force to the men. In some degree I doubt whether it is possible, at the age at which lads are entered, to say

what they are going to turn out. Many weakly lads are entered, no doubt, with the hope that a sea life will pull them together. This to my mind is a most unwise proceeding. Many of them never become other than weakly sickly men, and are a constant trouble and expense to the Service, and as I before said the Navy cannot afford to be made a convalescent home for the sickly youth of the country. We require the best physique and stamina in the land, and it may go hard with us some day if we have not got it.

The Anglo-Saxon, moreover, in comparison with other nationalities—the Teuton for instance—is a slow-growing animal. Up to the age of 20 or 21 he cannot, as a rule, compare in point of physical strength with the other, and we intensify the evil by taking our boys at an early age for training, for the hard physical toil which is a condition of life among the poorer classes in the struggle for existence is a grand developer of bone and muscle. The high diet and light work of the Navy may be a good thing for their brains, but it does not by any means tend to form their limbs.

By deferring the age of entry somewhat we should be better able to see what stuff a lad was made of. It may be said that by so doing a considerable number of the lads we now get would be established in life, that we should have great difficulty in getting a sufficient number, and even have to content ourselves with a lower and worse class.

That is not my opinion. The Navy is even now a profession which can command an ample supply of a good class of lad, and its advantages will become every day greater, in view of the increased competition and difficulties of life on shore. The discipline is light, the circumstances are easy, the men save money largely, even those who are married and consequently have additional expenses.

The following figures show a state of prosperity which will, I think, fairly compare with any other trade on shore.

Out of a small ship's company of 130 men and boys, in one year, deposits have been made in the Savings Bank which average over 3*l.* 4*s.* for the whole number. They have allotted during the same time 11*l.* per head, and they spend about as much more in the ship's canteen for extra comforts in the way of food. Altogether the very high figure of 25*l.* per man and boy saved out of their pay in one twelvemonth, and that the most expensive one of the commission for them. The amount is so great that it is difficult to know where it all comes from, but there are the figures. I do not think it an extravagant statement to say that a careful man can in the Navy save during the first ten years of his time a sum of 250*l.* If these facts were generally known throughout the country there ought surely to be no difficulty in entering what lads we please. I would suggest as a means to this end that the Admiralty should publish annually in the daily papers for general information the amounts allotted and the amounts deposited in the Naval Savings Banks per man. I feel sure it would have a very beneficial effect in encouraging entry into the Navy.

I look with considerable doubt on the present system of boys' training ships. I question their use and value in every way. The primary

object is, I suppose, to train the boys in seamanship; but from the general results, as exemplified in the boys, as they reach sea-going ships their standard of acquirements in that respect is of the most slender possible character. They have a little book knowledge, and that seems all. All the schooling they learn there should have been taught them—and as the general education of the country progresses it will have been taught them—in the State primary schools, and should in no case fall on our shoulders. In the training ships, from a variety of reasons, seamanship inevitably is pushed to the wall by the school instruction. The Senior Lieutenant of one of our training ships, who had been three years in her, told me the boys had to learn so much in school and the regulations in this respect were so exacting, that practically four or five hours a week was all they got in seamanship. Then, again, there are the grave inconveniences which arise from herding a large number of this class of lads together in these training ships, under what is too often extremely inadequate supervision. From the time they leave the training ships, all systematic instruction in seamanship, and more particularly discipline, ceases altogether, and that at a time when both are most needed, for it is not so much at 15 and 16 that a lad wants the control of a uniform and rigid discipline as from 17 to 19.

What we require of our seamen is that they should be able-bodied hardy men, sound in wind and limb, displaying a maximum of strength, fearlessness, obedience, and skill in the use of their weapons. Sail and spar drill is not the chief end in itself, but it is because it forms an unrivalled school for developing these qualities that so much importance is rightly attached to it. Work aloft gives a man handiness, hardihood, and self-reliance in a way which no other training can.

As far as the rough material is concerned I should, as I say, be inclined to favour a later entry of lads for the Navy—first, because the naval recruiting Officer would be better able to select youths of sound health and powers; and secondly, because we should then be able to pass them at once to instruction in the duties of their sea life, and avoid altogether that schooling which now not only absorbs so much of the training time, but prevents a proper attention being given to instilling the principles of discipline, respect, and good order.

The most important thing in the present day is, in my opinion, that a youth should at once be brought in contact with and under the control of a systematic and firm discipline. His first knowledge of the Navy as a profession should be by being made acquainted with and subjected to those principles of law, order, and subordination which are to guide his future life. In the training ships the boys are too young, and are too much occupied in the school-rooms to profit much in this respect, and there is no means for giving it them afterwards.

I think there is serious need for improvement in this matter. The temper which exists among our men is not satisfactory. As regards implicit obedience and respect for their superiors, there is much to be desired. The best way to impart the true principles of discipline is to get the youths thoroughly in hand at the outset of their career.

Much of the crime which now prevails among the younger seamen would, I am confident, be prevented if they were so dealt with. It is for this reason that I think the establishment of naval barracks, where a firm and thorough discipline would be the first consideration, is so urgently needed.

In the present day discipline as discipline, the doing of a thing without question because told to do it, however arduous or distasteful, is all the more necessary to be brought home to the men because the increasing independence, well-being, and education of the masses indisposes them more and more to any checks other than those of their own good wills and pleasures.

As a rule our men behave well and are contented, but this springs more from the fact that they are well treated and find their work easy than from any deep-seated feeling of respect and awe for the discipline under which they live. Their attitude is very happily expressed in the common story of the blue-jacket who wrote home to say that he "was very comfortable and had no fault to find with his Captain."

To some degree it is true that so long as our men are pleased to do what they are told to do, they do it readily; but when, as has happened here and there of late years, they have been told to do what it did not please them to do, the result has been occurrences which are not so much serious in themselves, as tending to show the presence of a spirit which is inconsistent with the existence of discipline in the true sense of the word.

The discipline necessary in the present differs altogether in character from that of thirty years ago. Although it is milder, it must not be the less firm. On the contrary, just in proportion as the men have risen in intelligence, education, and general independence of character, so the discipline, if juster, should be more strict. The hand may be light, but the grip must be of steel. With all their material well-being and concern taken for their comfort they should be made to know, even if they rarely feel, that a

"Two-handed engine at the door,
Stands ready to strike once and strike no more."

I do not think any sacrifice is too great to ensure that every young seaman from the moment of his entry is brought under the control of a rigid supervision and firm disciplinary training. The best means for this are drills systematically carried out, the worst the school desk; the best instructors, selected Officers and petty officers from among the best of both in the Service, the worst the school teachers.

Taking our young recruit for the Navy, I would send him direct to a naval barracks. There under an adequate staff of picked Officers and petty officers—and no pains should be spared in selecting the best of both that are to be found in the Service—I would thoroughly ground him in his drill and exercises, teach him the elements of seamanship and boat work, and thoroughly break him into habits of cleanliness, order, and subordination. All this could be taught easily in six months. It is taught with far rougher material in Germany

and Austria in four. I say naval barracks, because though I have to some degree the prejudice of every sailor against a shore establishment, I feel confident that we must before long come to that. My acquaintance with the systems practised in the naval barracks in Germany, Austria, and more especially Italy, has convinced me that under careful management they can be made to yield results of the highest value in the discipline and training of the men, without affecting the proper sailor-like instincts of our seamen.

In each naval barrack I would assign a portion for the accommodation and training of the recruits; they would thus reap the benefit of contact with order and highly trained men, and would share in the same strict and high-toned discipline.

After six months spent in training, I would send the lads to sea-going ships as ordinary seamen, giving them a cruise in a training ship previously, if practicable.

In addition to the work of training the recruits for the Navy, our naval barracks should form headquarters, to which all our seamen should return after service afloat, replacing entirely the guard ships in this respect.

Their establishment must be carried out in a liberal and earnest spirit. The discipline must be entrusted to some of the best Officers we have in the profession, assisted by carefully picked petty officers.

Good order, hard work, and systematic training should be the characteristics of these establishments. If we set about it in a proper manner, the advantages to the Service will be real and great. The results in this direction of the only barracks we have hitherto possessed have, from a variety of reasons, been eminently unsatisfactory, and have prejudiced the question. The system I have in view must in no case resemble that which has prevailed there, but must be infinitely higher and better. I say again that from what I have seen on the Continent, I am satisfied that naval barracks, properly organized and conducted, can be made productive of the highest benefit and utility to the Service.

Idleness and loafing at home must be carefully repressed. By constant drills and exercises, the time spent in the barracks must be thoroughly utilized in developing the discipline and efficiency of our men. If as things stand at present we had the extra men in our permanent list to ensure the whole of our fleet being manned, most of them would have to be kept in the guard ships, than which there can be no worse school for any of our men; but with proper naval barracks the maintenance of strict discipline and thorough efficiency of the whole *personnel* would be guaranteed.

The reason that the mass of our best men become seamen gunners is not only on account of the extra pay, but because under present arrangements it is the only way in which a man can ensure an occasional spell at home, of known duration. I think that out of a man's twenty years' service, which is virtually the whole of his active life, it would be a good thing to arrange that some fixed portion be spent at home. This would follow without difficulty from the establishment of naval barracks and abolition of our gunnery training ships for seamen

gunners.¹ Of course the efficiency of our men as seamen depends on their constant practice afloat, and in the earlier years of their life care should be undoubtedly taken that the men are kept at sea as much as possible; but at the same time our men, like the rest of mankind, do appreciate an occasional spell in England during their active career. At present, as I say, their principal motive in going in for gunnery is to be able to reckon upon getting such a spell. If a man does not go in for gunnery, it may happen that the whole or nearly the whole of his service is spent abroad. Some such arrangement as the following might be made:—

The recruit, after passing through his six months' preliminary training in the barracks, would go to sea as an ordinary seaman; say after three years he was paid off and returned to his barracks, three months on this occasion ought to be the limit of time he should remain there, including his leave. After a further three years afloat, at the end of which he might fairly be expected to have passed for leading seaman and got his extra 4*d.* a-day,¹ let the time in barracks be extended to six months, including leave. The needs of the Service would of course control the periods of stay, but I think there would be no difficulty with a little management to carry out such an arrangement.

After a further period of service afloat, during which a man would have entered upon his second term of ten years, the spell on shore might with advantage be increased to nine months and a year.

Some such recognized system would, I think, greatly increase the popularity of the Service. What impediments are there in its way? The marines are an integral portion of our Navy. Among them, especially in the artillery, arrangements prevail which have at present this effect. Why should one branch of the Service have this great advantage over the other? At present there is a great amount of what may be called "dodging" on the part of the men to gain a spell at home. Every one knows of it. Why not recognize the feeling, and reduce the arrangements for it to an orderly system, which would give every one a fair chance?

I have dwelt upon the high importance I attach to a skilful use of the weapons of war. In this respect, I think our present standard is very far behind what it might be and what it ought to be.

The principle upon which our gunnery training is based, viz., voluntary engagement, is, in my opinion, not only absurd, but prejudicial to the very spirit of discipline, as it virtually makes every man a judge whether in a most important part of his duties he shall or shall not know his work. Now this is a question which should never be left to a man's choice. Every individual joining the Navy should understand that the whole of his capabilities and intelligence are required in the service of his country. The least that ought to be demanded of a man is, that he should attain to such a knowledge of his drills as is the usual standard for a 1st class seaman gunner.

Indeed, the whole of our system of gunnery training is sadly in need of change. It is a relic of a time when the Navy consisted

¹ See *infra*.

partly of continuous service men, but in greater part of non-continuous men, and is altogether unsuited to the present day. The training itself is too tedious and protracted. Much of it is unnecessary and out of place; whilst the length and frequent repetition of the course have brought about other inconveniences which have already risen to the dimensions of a serious difficulty.

The general scope and object of our course of training were settled at a time when there were but few permanent men in the Navy, and the mass came and went with each ship's commission. Under these circumstances, it was desirable that each man who became a seaman gunner should not only know his own work himself, but should be capable of acting as an instructor to others. Every one who is familiar with such matters is aware how vastly more difficult it is to get men of that class up to the standard of being even fair instructors than it is to make them efficient as practical and skilful workmen themselves. I may be permitted to speak with some knowledge of the subject, having been for over three years in the leading staff of one of our gunnery ships, when I say that I am convinced a four months' course is ample not only to teach men all that it is necessary they should know, but to bring them to a much higher standard of practical skill and efficiency than it is possible they should reach at present. In my experience, I have known men as much as 15 or 18 months in the gunnery ship, out of which time they have only been 57 days actually at manual drill. They have hung about waiting for a class, and between classes employed in working parties, &c., with the result that by the time they were drafted, it was frequently found that under this desultory and fitful method of training, they had lost much of what they had learnt at the beginning. Then again a great deal of time had to be expended in learning tedious details and other matters, the mass of which, not one in a hundred of the men would ever require.

A ship is not the place for such training. The space is limited in the important respect of room for guns, which greatly delays the formation of classes, and the time wasted in going backward and forward to the various drill grounds is enormous, and productive of no good whatever.

Training in gunnery should be obligatory to every seaman. It should be just as much a matter of course as that he should know the points of the compass, and the course should be much shorter, and designed with a view to the requirements of the present day.

The first thing to recognize, and it is a highly important point, is that it is neither possible nor desirable to make every seaman a captain of a gun and an instructor. Both these duties are far too important to be entrusted to the average level of our men.

That being so, I am confident that the practical knowledge of the duties at a gun, the rifle exercises, and the cutlass drill, could be thoroughly and amply taught to our recruits during their six months' training at the naval barracks. There is no manner of question about this. Once having been well grounded in these matters, they should never be allowed to forget them during their service afloat. The

periodical drills and exercises which are carried out in each ship are ample to ensure that the rank and file of our men are kept up to the mark.

The present system of re-qualifying seamen gunners is ridiculous in principle and exceedingly costly and inconvenient as put in practice. As a matter of fact, it only serves to give the men a comfortable spell at home with light work and plenty of leave. Of course they like it well enough. We pretend to train a man thoroughly in gunnery and then send him to a sea-going ship for three years, to put what he has learnt into practice. We then proceed on the principle that in the very school of practice afloat, where he ought to have confirmed and improved his knowledge, he has forgotten everything, and commence to train him again. In what trade or occupation on shore would such an absurd state of things be endured? If the men, through exceptional circumstances, have fallen off somewhat in their drills when they return at the end of the commission to the barracks on shore, they would have an opportunity of being worked up again, but the idea of the necessity of a periodical re-qualifying course should be discontinued. The men on their return to the barracks should go direct on the roster for sea, and would whilst there take part in the daily drills and exercises of the barracks. Of course so long as all our seamen gunners are supposed to carry a vast amount of detail in their heads, an opportunity must be given to them occasionally of refreshing their memories; but this question does not, in my opinion, merit serious discussion.

The truth is, that in endeavouring to get too much out of *all* men, we have failed lamentably as far as the standard of practical efficiency is concerned, in two important respects—as a *whole* the seamen of the fleet are not by any means as smart in their drill as they ought to be, and secondly, there is an utter absence of any higher and more extended instruction for that portion of them who are called upon to act as captains of guns.

The question of having a highly skilled corps of selected men to act as captains of our guns is one to which adequate attention has never been given, and yet there is hardly a more important one.

Herr Krupp of Essen, who lives by selling his guns, thoroughly appreciates it. He has in his employ an Officer who does simply nothing but aim and fire his guns at the practice ranges, and he gives him a high salary to do it. And he is right, for the marvellous accuracy inherent to the guns themselves is not more surprising than the skill which this Officer displays in their use.

On the other hand, we who have property to the value of thousands of millions of pounds, not to mention our national honour, depending in great measure on the skill with which the guns of our fleet are worked, train all our seamen gunners in exactly the same way, and consequently all imperfectly, and pitch them all into sea-going ships to take their chance of being or not being captains and firers of guns according to the selection of an Officer who in most cases knows nothing of his men at first going off, and whose decision in many instances is dependent on considerations of rating rather than of skill as marksmen.

This state of things is deplorable. The true function of our gunnery ships—if they are to continue—is the training of highly skilled men to fire our guns and torpedoes; for if this latter weapon is ever to take a place among the destructive weapons of modern warfare, it can only be when it is handled by men who have had great and frequent practice with it.

My strong conviction is, that neither our guns nor torpedoes have had justice done to them in this respect. They are both highly delicate weapons, and require an intimate and prolonged experience in their use before their full powers can be brought out. The men intended to fire them cannot be too carefully selected in point of nerve, quickness of eye and hand, and they should go through an extended course of training and firing so as to develop these qualities to the utmost and make them first-rate shots under all conditions of wind and weather.

The haphazard system which now prevails, whereby any seaman gunner on joining a ship may be detailed as captain of a gun, is totally unsuited to the magnificent weapons which we shall shortly possess. It is not possible to overstate the advantages which would ensue from having special and highly trained men to fire these weapons. In my belief, as I have said, the successful issue of an engagement will be found to lie with that side which first deals with this important question in a manner worthy of it. With some men shooting is an institution. These it is we should get hold of, train highly, pay highly, for they will be worth it, and always employ on this special work. We proceed at present on the erroneous assumption that every man who has passed through his instructions creditably in the gunnery ships is thereby necessarily fitted to be a captain of a gun. To use a homely illustration, we assume because a man has learnt how to load and fire a fowling-piece, he must therefore be a good shot, and forthwith turn him into a turnip field and expect him to bring home a good bag, whereas the commonest experience of sporting is that of the hundreds who can handle a gun, hardly one or two possess the natural gift of quickness of eye and hand which, combined with constant practice, go to make a really good shot. When we reflect that the whole offensive power of one of our colossal iron-clads may be placed in the hands of four or five men, is it too much to ask that these men should possess the highest qualifications and receive the most careful training possible?

We give a chief torpedo artificer 6*s.* 6*d.* a day; is it again too much to say that a chief gunnery artificer—as we might well call him—is at least worth an equal sum, if not indeed the double?

If, as has been mentioned above, the conditions of efficiency seem to point to permanency of command as highly desirable, it may also be asked,—Do not the same conditions require that certain others among the Officers and men should be equally fixtures?

Changes among the engineering staff, the gunnery and torpedo staff of such a ship as the “Inflexible,” cannot be otherwise than injurious to their efficiency. Difficulties of arrangement then crop up, but how great would be the advantage of having such important individuals

as the captains of turrets and leading gun-numbers to remain constantly in the ship, and thus to become thoroughly practical and skilled in their work!

What a simplification there would be if the present complicated system of engaging and re-engaging, qualifying and re-qualifying seamen gunners were done away with and training in gunnery were made a *sine quâ non* for every seaman!

In other respects, the change would be most advantageous, for it would at once get rid of the difficulty of which we frequently hear so much, that of providing petty officers for ships fitting out. So long as we allow such numbers of our petty officers to pass so much of their time in the gunnery ships re-qualifying, it is not to be wondered at that we often are short of the proper complement for our ships, and have to take refuge in the evil expedient of rating any men who may come to hand. Abolish the re-qualifying course, and we should find no lack of petty officers for our ships.

By making it obligatory for every seaman to go through a thorough course of drill, we should of course discontinue the seamen gunners as a separate class, and in so doing the question of the extra pay which they now get would have to be considered. The effect of the present system of increasing a man's pay on his attaining a certain standard of efficiency might be preserved by giving all men on being rated A.B.'s an additional 2*d.* a day, and 4*d.* on their passing for leading seamen. I think it would be an excellent thing to make proficiency in seamanship the test for an increase of pay. The inducement to the better class of men to undergo a higher training in gunnery would be ensured by the greatly increased pay and better positions which I would give to the special corps of captains of guns, which I have referred to above.

To transfer the test for increase of pay from gunnery to seamanship qualifications would have a double advantage. It would remove that temptation to go in for seamen gunners merely to get a good time at home, and it would also tend to do away with that utter indifference to improve in seamanship which is daily becoming more and more a characteristic of so many of our young men. Considerable numbers of them remain years ordinary seamen. So long as they get their pay and food—which they are not worth to the State—they are content to remain such, and care nothing about getting on.

Drills of course all our men should know, and that would be ensured before they leave the barracks, and although all the men cannot be made at once leading seamen, they can all pass for it. The effect would be just the same as with the existing gunnery examinations.

An alternative might be found in giving a rise in pay to all the combatant ranks, but whilst the 4*d.* a day taken from the seamen gunners would have to be given back to the same class of men in some way, and to give it to men who pass for leading seamen would accomplish this, I am not in favour of increasing the pay of the lower grades. The inducement should be held out for men to reach the higher rates, where the pay might, I think, with advantage be better

than it is now. Whilst a considerable increase has been given to the artificer and non-combatant branches, the pay of the 1st class and chief petty officers still remains, I think, inadequately small. I fail to see that these men are less valuable to us than the others. The discipline of the Service in great measure depends upon them, and the duties they have to perform are not less important, and I do not think it a good thing that the comparison of wages should remain so much against them. The chief rates at all events should be better paid.

The Reserves.

The question of the reserves can only be considered in relation to the needs of our existing fleet.

What are these needs? Supposing that all the ships, the names of which stand on the Navy List, including those being built and about to be built, troop ships, gunboats, and the rest (with the exception of those old wooden vessels known to be unserviceable), were ready for sea, the number of Officers and men required to man them—as far as I can compute it—would be about 60,000.

As to these figures, it may be said that I have allowed the full peace complements to all the ships. If we were pressed for men, it would be found possible—indeed, in any case, I think it would be desirable—to reduce the complements of many of our ships to their actual fighting necessities. Many of our large ironclads would, probably, at the outbreak of a serious naval war land most of their spars, and perhaps some of their masts, so that their present large complements might, with convenience, be diminished. Not counting the Coast Guard or the boys under training, the numbers voted last year for the Navy were 52,600. So it appears, that to man all the ships that it would be possible to bring together in, say, two years from now—that is, when those now being laid down are completed—we need an additional force of 7,400 men. The Coast Guard numbers 4,000, the Royal Naval Reserve 12,000, 1,200 in the Seaman and Marine Pensioner Reserve, 1,200 in the Royal Naval Artillery Reserve—18,400 in all. Say that we got two-thirds of the Coast Guard and of the last two, and one-third of the Royal Naval Reserve—8,200 men together, this would be enough to man our fleet with, even on the liberal and exceptional basis taken above.

Although I do not see the use of having a force of men greatly in excess of the number of ships we have to put them in, yet it seems to me that the barest conditions of prudence and safety require that the permanent lists of the Navy should be kept up to such a point that we could man all our ships, if need be, with trained men; and that our reserves should be what their name implies—a reserve. With this view I think our numbers ought to be increased to the limit named above—60,000. It is, of course, a question of money, but surely we can afford to pay for an additional 7,400 men. If this were so, then I think the numbers of reserves are ample for our requirements—that is, that 18,400 men and Officers seem to me sufficient for filling up vacancies and keeping our ships manned.

It is alleged by some that we should only get a very small proportion of the Royal Naval Reserve men. I have only allowed above for getting one-third of them at once; but, surely, before any serious demand arose for reinforcements, we ought to be able to get together at least 8,000 or 9,000 of these men. We have paid for them, trained them, the men exist. If the country wants them we must get them, and I believe would get them—not all at once, we do not want them all at once—but in sufficient numbers to begin with, and in greater numbers within a short time. Moreover, if the country was hard pressed, there would surely be no lack of volunteers or recruits from our seafaring and fishing population. There are said to be 50,000 fishing boats on our coasts. Distributed throughout the fleet as reservists, these men would answer our purpose sufficiently. They might not be all trained men, in one sense of the word, but, for the discharge of subordinate duties at the guns, &c., they would probably be found an excellent stand-by. How are we to get them? Pay for them. War is in any case a costly affair, but perhaps the most economical course is to spend money liberally at the commencement.

Given our fleet manned—and that we should have sufficient permanent men to do it is, I repeat, the position I start from, I fail to see the need of a very numerous reserve. What are we to do with 30,000 or 40,000 men with no ships to put them in? The defence of our harbours ought not to fall on the Navy at all. It ought to be local, and entrusted to local volunteers, or to the engineers.

In general terms, the real work of naval operations will have to be done by our fleet as first fitted out. Casualties will occur, but, if these are so serious as to call for a large replacement of men, it is probable that the injuries the ships themselves will have suffered will give us sufficient time, whilst repairing them, to get together a fresh crew.

In a word, so long as we maintain a sufficient number of men in our permanent Navy to man all our ships, I do not think that with our great seafaring population, greater than any other nation possesses, we ought to experience any difficulty in getting such additional men for reserves as we require. If we have not got a sufficiency of permanent men, I can only say that I cannot understand how such a country as Great Britain, with her wealth and possessions, all depending mainly on her Navy, can rest quietly without having them. It seems to me the only basis for serious argument. To say that we prefer to remain in a partially prepared state, subject to constant alarms, and only able on the commencement of a war to man and equip a portion of our fleet because a country like ours refuses to spend an additional half-million a year, seems to me marvellous. That is, I say, the primary condition of common prudence and safety. It is, to my thinking, idle to try and devise methods by which our Navy can be otherwise manned.

There is hardly any question on which such a diversity of opinion exists as the probable number of men required for our Navy in time of war. Captain Long, R.N., in a recent paper,¹ enumerates the 58,800 we have on the lists, and the 18,590 we have in reserve, and

¹ "Journal of the Royal United Service Institution," vol. xxiv, p. 435.

goes on to say, "These numbers united" (that is 77,390 Officers and men) "fall far short of the fighting strength of the Navy." Is that so?

Much has been said recently about the employment of armed merchant steamers. Captain Colomb, R.M.A.,¹ seems to contemplate the employment of at least 400,000 tons of merchant steamers, carrying 1,200 guns, and needing 12,000 trained men.

He brings forward the fact that in the American Civil War 600 vessels, mostly steamers, were required for blockading the Confederate ports, apparently suggesting that in the case of a naval war we should require quite as many. But it is impossible to go into that question here. The scope of the present essay seems obviously limited to our existing Navy.

Other authorities, again, deny that anything approaching to this number (400,000 tons) of ships could be found, and doubt the use which could be made of them, if found.

The Admiralty, we are told, were prepared on a late occasion to bring forward thirty armed steamers, and have eighty steamers on their list. Probably thirty is the extreme number we could put our hands on in a reasonable time without a serious disturbance of our commerce. Allowing ten guns per ship and ten trained men per gun—an excess in both, I think—we have only 3,000 men required for these ships. Probably there is no combination of other Powers which could put anything like thirty armed steamers into the field—vessels at all able to compare with ours, that is.

To my mind, the true solution of the question is to increase the permanent strength of our Navy in the matter of ironclads to effectually blockade the enemy's ports, and of cruisers to protect our commerce. If armed merchant steamers are to be used at all—which I doubt—it should be for strictly defensive purposes; and even here the true mode of defence is in showing a pair of heels to an antagonist, which I think our steamers will always have the speed to do.

To arm and employ merchant steamers is, to my mind, a very imperfect substitute, situated as we are in regard to coaling stations, for a sufficient number of regular cruisers. It is a make-shift at best, and an indifferent one.

One or two shipowners, it is true, have publicly expressed their willingness to build their ships in such a way that armaments could be given to them. I am not behind the scenes in that matter, but, whilst recognizing the patriotic feeling which has animated these gentlemen, it has always appeared to me that their views have never been widely shared by the shipowning interest. The requirements of the Commercial Navy and of the War Navy are so distinct and dissimilar in so many important aspects, that I think they could only be harmonized with great difficulty and at some permanent loss. I think our shipowners should be allowed to provide for the requirements of commerce without any restrictions. Go to them, if you will, and say—"We cannot protect your trade with our present number of ships and

¹ "Journal of the Royal United Service Institution," vol. xxiv, p. 104.

our present expenditure," and I do not doubt that they would readily agree to the necessary additional outlay; but I, for one, should leave the Commercial Navy of the country alone to take such development, and in such ways as the daily progress in that class of ship-building brings about. In fact, I think the country and its commerce will flourish more by leaving their hands entirely unfettered in this respect, than by constantly anticipating and providing for the possibility of throwing the whole resources of the country into a life-and-death struggle.

The Navy is the police force of the State. Make the force stronger, and increase the tax for it if you will, but do not seek to make every peaceable man carry a constable's staff in his pocket.

With respect to the employment of armed merchantmen, the best procedure would probably be to make use, as far as possible, of the Officers who now command, and of the crews which now man them. They, at all events, would be more likely to efficiently handle their vessels than any others suddenly placed on board. With the assistance of an Officer or two from the Navy or Royal Naval Reserve, and with a small proportion of men trained in gunnery, the employment of these ships would be best left in the hands of their own Captains. A small proportion only of trained men would be needed, because I anticipate the proper nature of gun for these ships would be a light, long-range gun—say 5-inch breech-loaders at the heaviest—which, if properly mounted, would only require a few hands to work them.

I have before advocated the establishment of naval barracks. There is one considerable advantage which will result from this step—we could train all our reserve men there. I think it would be of great value in many ways to give our reserve men a better acquaintance with the regular line than they get at present. The men, too, would appreciate a time spent in the naval barracks, taking part in the comforts and recreations of such an establishment as well as in its discipline and drills. Friendship and goodwill would spring up between the regular and auxiliary services—we should get a knowledge of each other, which we do not at present. The Officers of the Royal Naval Reserve, for instance, are almost entirely unknown to us. It would stimulate the desire to belong to the reserve if the training in gunnery and drills were carried out at our barracks. The separation which now exists between the two branches is not a good state of things. In case of war we might have to make use to a considerable extent of the Officers of the reserve, and it is desirable that we should previously have acquaintance with them. It would make the fusion all the easier when the time came. The best Officers would become known and appreciated, and we should be better able to select them for employment when occasion arose.

Turning now to the question of Officers. At the present moment the following is the number of ships on the list of the Navy :—

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Ironclads	47	Ditto building ..	7
Cruisers, frigates, and corvettes ..	40	" "	7
Sloops	72	" "	7
Gunboats and small craft	88	" "	3
Depôt, troop, and store ships.	17	" "	—
	<hr/>		<hr/>
	264		24

Supposing that all those building were completed and ready for sea, we should require to command the whole and for other existing appointments—

130 Captains.
89 Commanders.
53 " second in command.
98 Lieutenants.

that is, the number of Officers which could be employed.

The numbers on the lists run as follows (June, 1881) :—

175 Captains.
214 Commanders.
95 Staff Commanders.
1,174 Lieutenants, Navigating Lieutenants, and Sub-Lieutenants.

It seems, at all events, that for the needs of the existing Navy we have a sufficiency of Commanding Officers. To give 4 Lieutenants to all large ships, 3 to sloops, with a proper proportion of Gunnery and Torpedo Lieutenants, would take about 960 of these Officers. The Lieutenants and Navigating Lieutenants together number 958. As these numbers are insufficient, we should have to fall back on the Sub-Lieutenants, though full employment could be found for the 216 on that list, on the Officers of the reserve—at present very few in number—and probably on our retired lists.

The chief want, however, would probably be found in engineers. A ship might go sea with a Lieutenant or two short, but it is clear no reduction could be made in the engineering staff. This is a point which should not be neglected until the fact is brought home to us that our fleet cannot go to sea because there are no engineers. There is no lack of suitable men in the country. The solution of the difficulty simply is—pay for them.

The strength of the engineering staff should be kept up permanently to the full requirements of the entire fleet, for to engage men hurriedly would probably be a fruitful cause of accident.

Treating our reserve as a reserve—that is, men kept in hand to meet the waste by sickness and casualties during war, and taking the permanent strength of the Navy as above—60,000—what ought to be the proportion of the reserve to the regular force? Would a third be sufficient—viz., 20,000 Officers and men—its present nominal strength?

The question of Army Reserves should not be confounded with that needed for a Navy. The Army Reserve is virtually a portion of the fighting line. With us it is not so, or ought not to be so. Its proper

rôle is that which I have stated above. The conditions of our maritime supremacy, and the imperative interests of the country demand and repeat that our naval requirements should be met by a full force of regulars, and our Navy should not be organized and manned on a principle of part regulars and part reserves.

Of course, if our fleet is to be largely increased, the lists will have to follow suit. If there is to be a large flotilla of torpedo-boats; if the Navy is to undertake the torpedo defence of our ports at home and abroad; if anything approaching to Captain Colomb's view of the employment of armed merchant steamers is to be entertained; if, in short, we are to give free play to our imagination as to the number of ways in which seamen could be employed, the numbers of Officers and men we might use is endless, but these questions belong rather to the future than to the present. What I have dealt with are the needs of our existing fleets.

The changes which I think are called for to ensure the efficiency of the *personnel* of the Navy may be summarized as follows:—

(I.) As regards Officers—

- (a.) Longer period of preparatory study for Naval Cadets.
- (b.) The examination in study work on leaving the College to be final in that branch.
- (c.) Abolition of school work afloat, as far as naval instructors are concerned.
- (d.) Captains of ships to be made solely responsible for navigation and pilotage, and consequently abolition of a separate class of Navigating Officers.
- (e.) Some improvement either in prospect of promotion, intermediate rank, or of the pay of Lieutenants.
- (f.) The engineering staff to be kept up to the full requirements of the whole fleet.

(II.) As regards the men—

- (a.) Recruiting for the Navy to be entirely in the hands of naval Officers.
- (b.) Abolition of the present system of harbour training ships.
- (c.) Establishment of naval barracks.
- (d.) Later first entry (age to be determined).
- (e.) No obligatory school course.
- (f.) A course of six months' training in the barracks, and then sent to sea.
- (g.) Training in gunnery obligatory.
- (h.) Abolition of the class of seamen gunners.
- (i.) Formation of a corps of skilled marksmen, gun and torpedo, with largely extended practical training.
- (j.) The increase of pay now given to seamen gunners to be granted on passing for leading seamen.
- (k.) The permanent list to be kept up to a point sufficient to allow of all our ships being manned by the regular line. This number I put at about 60,000 at present.

- (l.) The reserves to be trained at our naval barracks, and with the regular line. This includes the Reserve Officers.

To which I would add the following as suggestive points for consideration :—

Permanency of appointment, to some of our ships at all events, for the Captain and certain others of the Officers and ship's company.

Increase of pay to some of the higher ratings of the combatant branch, as an inducement to good conduct and exertion.

ESSAY.¹

ON THE BEST METHOD OF PROVIDING AN EFFICIENT FORCE OF OFFICERS AND MEN FOR THE NAVY, &c.

By Sub-Lieutenant REGINALD G. O. TUPPER, R.N., H.M.S. "Renard."

"L'Espoir est ma force."

THE efficiency of any force depends entirely on the abilities of the Officers who are in command of it. I therefore propose to consider the above subject, first with regard to the entry and education of the Officers of the military branch of the Navy, then to treat similarly the other branches of the Service, both as regards Officers and men, and lastly, to consider the Reserves.

In the first place it is absolutely necessary that our Admirals and Captains should be thorough seamen, for no matter whether it be in handling the largest ironclad, with or without masts, or the smallest gunboat, seamanship is always required.

In addition to being seamen, they must be men of superior education and abilities, possessing a good knowledge of mathematics, physics, and all details connected with naval drills and war material, and a thorough knowledge of naval tactics.

The Captains in particular should be thoroughly acquainted with the details of the double bottoms, water-tight compartments, engines and pumps, of the ships they command, should thoroughly understand everything connected with the guns, arms, and electric gear placed under their charge, and above all should know thoroughly the behaviour of their ships in all circumstances of wind and weather, more particularly with regard to the effect of the rudder at different speeds, whether moving ahead or astern.

To arrive at all this knowledge these Officers must have a severe training, and should commence their career at an early age, so that their minds and ideas may be formed in the Service.

Much has been said lately about the age of entry and training of cadets. It would, I think, be a great pity to enter the cadets at a more advanced age than at present, because as a boy gets older he learns to appreciate the comforts of a home, a room to himself, and the hardships which fall to the lot of a midshipman and Sub-Lieutenant would seem all the harder to him because he had been longer accustomed to luxury; the consequence would be that he would become discontented and soon desire to leave; therefore I say let the age of entry remain as at present.

¹ Honourably mentioned.

Not very long ago it was almost resolved to throw this branch of the Navy open to public competition, but I am glad to say we have not yet arrived at that. I fail to see what benefit would be derived from such a proceeding; as long as we can get a sufficient number of boys, sons of gentlemen and Officers who have served their country, who pass the standard required, and who, when they become men, show that amongst them are men with brains sufficient to satisfy the scientific requirements of the Service, what is the use of introducing a lot of boys whose fathers have no claims whatever on their country?

I therefore think it desirable to continue the nomination system, that 100 nominations be given away annually, *i.e.*, 50 each half-year, and that there be 25 vacancies for naval cadets per half-year. This would be ample to supply the requirements of the Service.

With regard to the disposal of nominations, the Service is not very generous to her retired Officers; they are mostly poor men with one or more sons: what a boon it is to such men to be able, in these days of severe competition, to send their sons into a profession in which they possess friends; I would therefore have more nominations at the disposal of Admirals and Captains annually. If each Admiral on full pay had two nominations every year, and each Captain had a nomination on commission, and another on paying off his ship, this would still leave about fifty nominations per annum to be disposed of by the Lords of the Admiralty, and would, I think, be a more popular arrangement than the present.

Training Cadets.

The principal things to instil into a cadet's mind are, discipline, navigation, and seamanship, and a solid grounding in those subjects in which he has ultimately to pass in his examination for Lieutenant.

To meet these requirements it would, I think, be advisable to extend the training of cadets from two to three years, on the following plan: The "*Britannia*" to remain, as at present, the stationary training ship for naval cadets; and attached to the training system, three frigates of the "*Immortalité*" class.

During the first year the cadets would study Euclid, algebra, and trigonometry, as far as necessary for them to learn how to work a complete day's work in navigation; at the expiration of their first year this could easily be arrived at. In addition to this they might be taught French and elementary seamanship, but the larger part of the time to be devoted to study. At the expiration of the first year's training, and after the usual vacation, the cadets would then join the training frigate, one of which should leave England every six months, and be absent cruising in foreign parts for one year; there would be always one ready to start, and each would have about four months to refit after the cruise. The training frigate would not be entirely for cadets; she would be essentially a sea-going training ship for boys and ordinary seamen as well as for the cadets; as she would require but few guns, there would be room for berthing a

large number, and the actual men should be picked men of "V.G." character.

On board this training ship the cadets would have that practical education in seamanship and navigation which I hold is so essential to instil the knowledge and inspire the confidence necessary to those subjects.

The mode of instruction on board would be (at sea): in the morning, to take sights; forenoon, study navigation and the subjects belonging to it; to take sights at noon; work the day's work. In the afternoon to be instructed practically in seamanship, either drilling aloft, or learning splicing, fittings, &c.

One afternoon a week for squad drill, as well as drill every morning half-an-hour before breakfast.

In the evening, from 7 to 9 P.M., study at extra subjects, such as elementary mechanics, physics, French and English grammar and composition.

In harbour, a similar routine would be carried out, and the cadets specially instructed in rating chronometers and boat sailing. Facilities should be afforded to the cadets of visiting places of interest, and when in port they should be encouraged to take exercise on shore as much as their studies would permit.

In all the evolutions they would work aloft with the mizentopman during first six months of their cruise; after that it would be beneficial to place one in each top to take different duties of men aloft.

It would be very beneficial to have in fine weather a gymnasium on the quarter-deck in the evening after quarters; it would be a pleasant recreation, and could easily be managed.

During the latter part of the cruise, the cadets should be made to perform the duties of quartermaster, boatswain's mate, weather wheel, and leadsmen, during the afternoon instruction.

On return to England, the ship should be dismantled for refitting before the cadets were discharged. Before proceeding on leave, the cadets would be examined in seamanship and navigation (of which they ought to have attained a very fair knowledge) by Officers specially appointed by the Admiralty for that purpose. This examination in seamanship and navigation would be final, and according to the class taken by a cadet he would be allowed to count time towards sea service as midshipman.

After a recreation, this batch of cadets would return to the "Britannia," and would study Euclid, algebra, trigonometry, mechanics, physics, French, and drawing, during their last year, at the end of which they would be examined, and if they passed, all be rated midshipmen, those obtaining 1st or 2nd classes would be allowed to count time towards their sea service as midshipmen.

On final discharge from "Britannia," the average age would be 16; they would then serve four years as midshipmen, those with 1st class certificates only serving three years, and the remainder regulated according to the class they took on passing out, but none to pass for Acting Sub-Lieutenant before the age of 19.

At sea the course of studies and drills would be similar to those

now carried out on board sea-going ships, with this exception, that during his final year of service in that rank, a midshipman should keep Officer of the watch during the day at sea, under the superintendence of the Lieutenant, and should be made to "carry on" at all the watch evolutions, &c.; during the day being left as much as possible to himself, *i.e.*, not being interfered with unnecessarily. This would be a great advantage to him, and make him a practical and not a "book-learned" Officer of the watch.

Now a word about the social position of a midshipman: at 18 he is allowed to smoke; in many ships the gun-room Officers are not allowed to smoke on the same side of the deck as the ward-room Officers, but are made to smoke with the engineer and warrant officers; now although amongst these Officers there are some nice men, yet they are not, as a rule, the class for a boy of 18 to associate with.

Eighteen is a critical age, an age at which a young man can be influenced a great deal either for good or the reverse; and it cannot be expected that a boy's morals or ideas can be improved by associating with those who have not had the advantage of being brought up in the same high social position as himself; whereas, if he was allowed to smoke with and talk to his superior Officers, who, in addition to their bringing up, had the polish of society, it is at least to be supposed that he would not be harmed by their conversation, and very probably his ideas and manners would be considerably improved by it.

It would not, I think, be advisable to make the examinations for the rank of Lieutenant any harder than they are at present, for although the foreign Navies require a higher mathematical standard than we do, I do not think their Officers are much the better for it, and moreover the increased mathematical knowledge must be acquired at the expense of seamanship, gunnery, &c., which is not desirable.

But as torpedoes have become such important items in modern navies, I think a torpedo short course would be beneficial; for every executive Officer ought to know how to use all the weapons of his Service, and their use and construction ought to form a part of his education.

As a matter of fact, in a naval action the Torpedo Lieutenant would not be the one to go away in the boat to fire the torpedoes, he is too valuable an Officer to run such a risk; if he got killed, the whole torpedo department of the ship would be *hors de combat*. Any Officer with a very slight knowledge of torpedo work could fire a "White-head," and lay down mines, &c., testing them afterwards; and it is desirable that all executive Officers should possess, at least, this knowledge; at present the majority do not.

Again, it would be an inducement to work hard at gunnery if those Sub-Lieutenants who showed prominent abilities for gunnery duties were appointed for *gunnery duties* to those ships which are not allowed Gunnery Lieutenants, and were allowed extra pay of 1s. per diem for performing the duties; and one of these Gunnery Sub-Lieutenants might be selected each year for promotion.

With the Sub-Lieutenants' List commences the promotion by selec-

tion, against which many cry out, but which is really most beneficial to the Service. We want, for our Admirals and Captains, men comparatively young, and of superior abilities, in full possession of their nerves and energies; to meet this demand, we must pick out smart, clever young men, at the commencement of their career, and push them on as quickly as possible; this will, of course, entail letters in the papers from senior Officers who think that justice has not been done to their own abilities, also saying that they are surprised at the selection. But the Admiralty possesses all the records, good and bad, of an Officer's career in the Service, while the individuals who complain generally get their information verbally from others; surely the Admiralty are the best judges, and the complainants are in the wrong.

With regard to the Sub-Lieutenants, of course, the three examinations passed by them, before being confirmed in that rank, brings at any rate those with the best brains, and generally those who are best "all round" to the front, and these are rightly promoted. The Royal Yacht is another way to bring good men to the front, and these appointments should be reserved for those who, though not good at study, have done their best, and who possess the qualities of a "good Officer."

With regard to the Lieutenants, it would, I think, be beneficial to the Service if the annual promotions of the Senior Staff Officers of the "Excellent" and "Cambridge" were revived, and that the Senior Torpedo Lieutenant of the "Vernon" was also appointed annually. For men holding these appointments are the clever men, who by dint of hard work, added to their brain power, have caused themselves to be placed in those important positions. It has often been said that men who have gone in for these special studies are consequently not good seamen, but we have examples to show us that these Officers possess qualifications in seamanship and in ship work generally, equal to their excellence in the special subject, and in the case of torpedoes it requires a seaman to lay out and weigh mines, and do all the boat work connected with torpedo warfare of the Naval Service. These three promotions, together with the annual one of the Royal Yacht, would provide a sufficient amount of "young blood" for the higher branches of the executive Officers.

One Commander might be *selected* annually by the Admiralty for promotion, in addition to the ordinary promotions.

With Commanders ends promotion by selection. We could not well afford to have an active list of Captains or Admirals reduced in number: this necessitates a large number being on half-pay for considerable periods, during which time these Officers are liable to get behindhand in the march of improvements which are continually taking place in our ships, armaments, tactics, &c. This is decidedly injurious to the Service, therefore it would be a good plan if these Officers were encouraged to attend a class for a short period every year, at which they could be informed of, and shown the latest improvements: and they might also attend—say for a week—the tactics of the Reserve Squadron at some period of its annual cruise; they

would then be better able to keep pace with the times. With regard to our Captains alone, our modern ironclads are such complicated machines that it takes some time to understand all their internal arrangements. Now, of course, a Captain ought to be intimately acquainted with everything connected with his ship. He would have a much better chance of thoroughly mastering this knowledge if he were appointed to her a month, or, perhaps, two months before hoisting his pennant, so that he might go into everything with the Staff-Commander and Chief Engineer.

I have not spoken about the Navigating Branch, because the present plan of supplying the Service with Officers for these duties will, I think, meet its requirements.

With regard to the Surveying Service, I think it ought to be supplied, as at present, by naval Officers; but that, after joining the Surveying Service, they should make it their profession. Surveying requires the whole time and attention of a man, and he cannot have time to perform his duties as a naval Officer in addition to his surveying work. It is a most important branch, because the safety of our ships cruising in foreign parts depends upon the accuracy of the surveys; and there is a very large portion of the world which is but indifferently surveyed at present.

It would therefore, I think, be a good plan to allow a certain number of Lieutenants and Sub-Lieutenants (according to the requirements) to volunteer annually for this service, to be well paid, and to be ranked as Surveyors, of different classes.

Also, instead of having men-of-war employed on this service, it would, I think, be better to have handy little unarmed steamers of about 800 tons, manned by the Royal Naval Reserve seamen, and a staff of trustworthy quartermasters, and fitted with all the modern appliances for surveying; my reason for manning these surveying vessels with Royal Naval Reserve men instead of blue-jackets is that the nature of the work done by a surveying vessel prevents the possibility of the blue-jackets being kept up to the mark in drills, and even in discipline, which is injurious to them, and often gets them into trouble when they are afterward on board a man-of-war.

The branch of the Service next in importance to the Military Branch is undoubtedly the Engineers. The present system of educating these Officers at the Dockyard, in the "Marlborough," and at the Royal Naval College, and drawing from its ranks our future "Chief Constructors" and naval architects, cannot be improved upon, and will, undoubtedly, produce excellent results.

The Medical Branch must next be dealt with, for without doctors we shall be very badly off, both in peace and war.

This is the only branch of the Service in which the Officers do not enter as boys, and receive their education in the Service: it is notoriously hard to induce surgeons to join the Service, even under the existing high rate of pay in the commencement of their career; probably the appreciation of comfort on shore, instead of being cooped up on board ship, has a great deal to do with it.

Why not enter lads by competitive examination at, say, 16 to 17

years of age, and educate them as doctors in our Naval Hospitals binding them, in a word, to serve for ten years, as is the case with engineer students?

I think many lads would present themselves, and, being trained up under naval discipline, they would have more *esprit de corps*, and be more contented than are the medical Officers of the present day: and, moreover, we should not have much fear of the supply falling short of the demand.

With regard to the Paymaster's Department, I shall say nothing, as at present that branch is efficient.

Having exhausted the topic with regard to Officers, let us now turn to the "men."

The life of a blue-jacket, and the strict discipline to which he is subjected, is so different from that of a man on shore, or even in the merchant navy, that it is hard for a man to break himself into it; therefore it is unquestionably most desirable to train all our seamen from boys, and not to enter any *men*, except in the case of an emergency.

There can never be any difficulty in obtaining boys, for their parents, in these days of dear food and over-population, are only too glad to see their sons provided for in an honourable profession; and, therefore, we can always select those with best characters and qualifications.

I see no reason why a certain number of boys should not be sent annually from the different workhouses in the United Kingdom to the training ships. If each workhouse was allowed to send a number, varying from twelve to twenty-four (according to its size), of the best behaved boys each year, it would considerably relieve those institutions and enable them to extend their charities; besides, these boys have been brought up at the expense of their country, surely they, then, ought to show their gratitude by serving it.

The training of boys should be carried out so that at least half their time during training should be passed in practical instruction on board sea-going training ships, some being sent to the six-monthly "Cadets' Training Frigate," the remainder distributed amongst the brigs.

Ordinary seamen should be drilled in the sea-going ships constantly, no matter what their age, until they had passed from able seamen.

It would be a good thing if it were instituted that no A.B. could be rated a petty officer unless he was either a "seaman gunner," or a "trained man," for this would encourage more men to join the training classes and become intimately acquainted with the use of their small arms; for in these days of colonial wars there is always a Naval Brigade landed; and for this purpose we want men who know something about their drill.

At present rather too much time is occupied in trying to make blue-jackets march in line, and do battalion movements. As a matter of fact, the training of a blue-jacket does not admit of his marching like a soldier; his limbs are too loose; consequently I have heard military critics ridiculing the attempts at marching past, &c., made by blue-jackets; whereas I have also heard critics praise their

skirmishing, saying that trained troops could not have done better; they ought, therefore, to have particular training in skirmishing, for which they evidently possess a genius; and when fleets land their small-arm men for exercise, they should practise route-marching to give the blue-jackets some idea of an army on the march.

It would also be beneficial if more facilities were given for ball practice; every fleet and station should have a rifle club at the headquarters, and facilities offered for men to practise at the butts in the afternoon; a small outlay by Government, added to the subscriptions by the Officers and men, would provide ammunition and money for prizes. *This* would increase the efficiency of our small-arm men, and at the same time be a pleasant recreation for the men.

In each ship carrying a Torpedo Lieutenant it would be advisable to establish classes for instructing men in the practical part of torpedo work, giving the rating of "acting torpedo men," with extra pay of 1*d.* per diem. This would form a valuable reserve in the event of war; for if war broke out we should at once require a large increase in the number of our torpedo men; the requirements could then be met by having a very few trained torpedo men in each ship, supplemented by a number of the acting torpedo men, who would possess sufficient knowledge to do the majority of the practical work.

The pay and length of service of the men would remain as at present.

A help might be given to pensioners by entering their sons as apprentices to various trades in the dockyards, not with a view to their becoming *dockyard* artificers, but with a view to their serving for ten years in the fleet after having learnt their trade. To this it may well be argued, "What is the use of going to the expense of teaching a lot of boys different trades when we can get trained artificers?" I can reply that if we educated the artificers ourselves it would not be necessary to give them so high a rate of pay, and, as before stated, it would help pensioners by taking their sons off their hands; their boys would learn a trade, at no expense to their parents, and, after leaving the Service, could practise it.

All the foregoing may be summed up in a few words: "To provide an efficient force of Officers and men of all branches of the Service for the Navy, it is in my opinion the best plan to enter *boys* and train them up in the Navy."

Reserves.

For *this* we require a number of Officers and men sufficient (1) to man ships for the purpose of increasing our fleets abroad, and ocean cruisers to protect our own and destroy our enemy's commerce. (2.) To man a fleet for the purpose of the defence of our own island. (3.) To be in readiness to be despatched to fill up casualties occurring in the various fleets.

First, as regards Officers.

We have 66 Admirals on the Active List; there are in all 22 appointments: in war time it is not probable that more than 10 appointments would be made in addition. This would leave over 30 Admirals

unemployed, so we should not require to draw any from the half-pay list.

Of Captains we have 86 employed on full pay out of 174, this leaves 88 to fall back upon in case of war; this would be a sufficient number.

Of Commanders, out of 214 we have about 150 in employment, which leaves about 60; this is not enough, because out of this must be drawn those second in command of the big ships as well as those who would probably get command of ocean cruisers; but to supply this want some Lieutenants could be promoted, and those who had not been retired for a longer period than five years might be called upon to serve. Of course all Officers holding pensions are liable to be called upon in an emergency, but I doubt if it would be beneficial to take men who had no connection with the Service for more than five years—for during that time one is apt to forget a good deal, and moreover would know very little about the improvements; with the "men" it does not so much matter if they *are* behindhand, but it is absolutely necessary that Officers should be thoroughly conversant in everything connected with the Service, otherwise the men under them will not have the necessary confidence in their Officers.

The demand for Lieutenants would, I think, be the hardest to meet; we have 852 on the list, out of which there are about 650 or more in employment; this only leaves 200 to supply the deficiencies in the Commanders' appointments, to man the various Captains and Commanders' commands, and to command those little gunboats which would form a very formidable fleet to oppose an invading force; we have 78 Lieutenants, R.N.R., and 77 Sub-Lieutenants, R.N.R.; but the probability is that we should not be able to get a quarter of these Officers, and as for the retired Lieutenants, they have in very many cases emigrated and are out of reach. Our own Sub-Lieutenants are nearly all abroad, and would consequently not be available for appointment to the ships fitting out.

There ought therefore either to be a special reserve of Lieutenants to meet this demand, or the Lieutenants' List ought to be increased: the former would be the better.

The number of men employed in our fleet at present is about 35,000, in war time we should require about double this number, perhaps more. What Reserve have we to meet this demand? The Coast Guard furnishes about 3,500; the "R.N.R." has in its ranks some 20,000 men, but of course the majority of these are in ships abroad, and we should be lucky if we could put our hands on more than 5,000 of these men a week after they were called upon to join. There are about 20,000 pensioners, but many of these are too old to serve, others have emigrated, and if 10,000 men who were fit for active service presented themselves, it would be about as much as we could expect, and thus we may suppose that in a week after the calling out of "Reserves," they would muster about 18,000 men: this would not be a sufficient number.

A most valuable Reserve could be formed from those men who leave the Service at the expiration of their ten years' engagement, these would all be well seasoned, and trained men, in the prime of life.

This Reserve might be formed in the following manner: on a man completing his ten years' service, and if he were not willing to re-engage, he should pass into the Reserve; and continue in the Reserve for five years. He could be encouraged to do this by the pay of 4*l.* per diem, and being given to understand that he would only be called out in a national emergency; we can assume that about 2,000 men would pass annually into this Reserve, and serve for five years in it; this would give us 10,000 men, who would be practically worth about 20,000 of the other Reserves. The cost of maintaining this Reserve would be only about 60,000*l.* per annum—not a very large sum.

It would also be an excellent thing if each of our Colonies possessed a Naval Militia, in addition to their Army Militia. It would be an admirable thing for our fleets, serving in those Colonies, to have a force to fall back upon; because with it we could at once man merchant steamers, and despatch them to harass the enemy's commerce in every quarter of the globe, and at the same time keep our own fleet fully manned; Australia does possess the nucleus of such a force, but it is only a very small one; Canada does not possess anything of the kind. Now Canada, with such a large seafaring population, might easily organize an efficient Naval Militia. There are about 10,000 fishermen who, during five months of the year, have little, if any, employment, and mostly live on their summer earnings; depôts might be established at towns accessible by rail or steamer, at which these men might be trained in batches of 100 for a fortnight or a month at a time, during which period they would receive a small amount of pay. After the first outlay for building and organizing the establishments, the cost of maintaining them would not be very great, whereas such a Reserve would be very valuable, and it would, I think, be popular.

In the event of war, stokers would be very much in demand, as all the trade would be carried on by ocean steamers, who would pay them very highly; it would be hard for the Navy to find enough of these men for our men-of-war. This would be a very serious thing, and it might perhaps be met in a small degree by each ship, when under steam, sending some of the deck hands down below to learn stoking, these men being of course paid as stokers while performing the duties. We should thus possess a large number of men who knew something about stoking, and could be so employed on an emergency arising, for there is an art in stoking, and it requires practice.

I have not mentioned the subject of the Marines, because this corps is in such an admirable condition of efficiency that it leaves nothing to be desired.

The establishment of the three sea-going training frigates, the cost of educating our own doctors, and of the maintenance of the additional Reserves, would cause an increase of about 150,000*l.* in the Navy Estimates; but if by the annual disbursement of such a sum the efficiency of the "First Line of Defence" can be very materially increased, surely the British public will not grudge the expenditure.

Friday, March 17, 1882.

ADMIRAL SIR EDWARD G. FANSHAWE, K.C.B., Member of
Council, in the Chair.

NAVAL EDUCATION.

By J. K. LAUGHTON, M.A., R.N., Mathematical and Naval Instructor
at the Royal Naval College.

SEVEN years ago I gave some account, in this theatre, of the organization and work of the Royal Naval College, then recently established at Greenwich. Our Council has now requested me to address you again on the subject of Naval Education, wishing me, as I understand it, to speak of work achieved, as I formerly spoke of work proposed.

The College has now been open for nine years; and though it is not my intention to take exact stock of all that we have done, I think I am speaking well within bounds, and indeed within the knowledge of all here, when I say that we have done a great deal, and that the results are, under existing circumstances, fairly satisfactory. Still there is no finality in our work; we can, and I hope do, put before ourselves an ideal, unattainable perhaps, as ideals mostly are, but still one which may lead us, as the guiding star of truth, towards the haven of knowledge. I have, however, no wish to show matters in any exaggerated or distorted form. I have spoken of our work as in the main satisfactory. I call it so because we find the Officers, who come as voluntary students, are, for the most part, really desirous of learning; whilst those who come to go through a specified course, follow it with an almost extreme industry. On the broad face of England, I do not believe there can be found a body of students developing and maintaining such power of work as is put forth by the Officers who are passing through the gunnery and torpedo courses. The course of the Sub-Lieutenants, as well as the examination which follows it, is obligatory: there is no shadow of option about it: and though Sub-Lieutenants have perhaps, sometimes, not quite realized the responsibilities of their position, and during the first few months of their time have chosen to "dance and skylark" on every opportunity, rather than to work, still, in the long run, the sense of the dread examination before them brings them to a small helm, and very earnest application.

At the beginning, our work at Greenwich was very much retarded by the general want of preparatory knowledge. This did grievously weight us. Those Officers, more especially, who came as voluntary students, came with an extremely small foundation of scientific knowledge; and thus a large—an undue portion of the time was taken

up in attempting to establish that basis, and not always with much satisfaction either to the students or to the instructors. The fact is that the one and only basis of scientific knowledge is mathematics: the amount absolutely necessary may be small, but that small amount cannot be done without. But when men have got to the age of five and twenty or thirty, without mastering the elementary principles of geometry and algebra, the task of then doing so is extremely irksome, and in many cases, utterly impossible: and a very serious question arises as to what we are to do with such men; men, whose minds have hardened down in other grooves: men, into whom mathematics cannot be put, except by a sort of moral force pump, and then only to escape as soon as the pressure is taken off.

I know it is said, I hear it said every day, why not let those men, to whom the study of mathematics is so distasteful, work at something else? There are, of course, plenty of subjects, of very great professional interest and utility, into which the study of mathematics, even the most elementary, does not enter. History, for instance, is one, which I, of all men, am not likely to undervalue; and I have frequent experience of the way in which it is neglected by our Officers—I speak not only of naval history, but more generally, of English or European history. Languages again are not much studied. Considering the way naval Officers go about the world, the number who can speak any language except their own is curiously small: French would seem almost a matter of course; but Spanish in the Pacific, Italian or Greek in the Levant, are often enough wanted. And there is one language, still nearer home, the study of which is entirely neglected: I mean English. I hear men speak of the difficulty they find in the French, or German, or Spanish Grammar: it is, most commonly, that they know nothing of the grammar of their own native English. We don't want our Officers to be grammarians, in the scholastic or pedantic sense; but the correct and elegant use of his mother tongue is an accomplishment that beseems every English gentleman.

Now I, at any rate, am not going to disparage or undervalue any one of these studies, or others which may suggest themselves to you. I think that naval Officers ought to be familiar with them, and ought to work at them to attain that familiarity; but, in the present state of things, I do not know where they are to do this. We have, indeed, a certain limited amount of instruction in French and German, but certainly not enough to do more than enable the student to keep up any knowledge he already has. We have also a short course of lectures on naval history: but of general history, or of English literature, nothing at all. And indeed, much as I should like it, personally, I do not see how it is possible to have it. For these subjects, however much we may value them, are not scientific in the ordinary sense of the word: and it has to be borne in mind that it was for the study of scientific subjects alone that the College was mainly instituted. This is distinctly stated in the original circular establishing the College,¹ which

¹ 30th January, 1873.

says:—"My Lords intend that the Royal Naval College at Greenwich shall be so organized as to provide for the education of naval Officers of all ranks above that of midshipman, in all branches of theoretical and scientific study bearing upon their profession." Any instruction that may be given in subjects not theoretical and scientific—though not prohibited, and in some cases even directly approved—is thus outside of the strict line prescribed for the work at the College. It is thus that, hitherto, so much time has been devoted to mathematics: it is thus that so much time is still devoted to mathematics. "I own it, I deplore it"—but I cannot add "I condemn it"; the only possible end to it that I can see—except of course the altering the constitution of the College—is the general cultivation of mathematics by the junior Officers of the Service; and that to such an extent that, when they afterwards come to the College as voluntary students, they may be able to show that they do possess so much mathematical knowledge as fits them for going on at once to any branch of science they choose to work at. I can picture to myself such a happy time; but I see no immediate prospect of it.

And yet the state of things is, unquestionably, much better than it was. For the more severe examination which the Sub-Lieutenants have to undergo necessarily brings a large proportion of them up to a respectable standard; and the half-yearly examinations through the fleet have impressed on many the necessity for constant application. It was formerly very much the rule for midshipmen to spend their time, so far as mathematical instruction went, mainly in forgetting what they brought away from the "Britannia." That of course was not to be wondered at; for little or no mathematics was absolutely required at the final examination, and the half-yearly or fleet examinations had no existence. When these were first instituted "it was found that the knowledge of the midshipmen appeared to be in an inverse ratio to their time from leaving the 'Britannia,' the seniors standing at the bottom." This was the report of the Inspector of Naval Schools, in 1874. The introduction of mathematics into the final examination of Sub-Lieutenants at the College, as well as the institution of fleet examinations, has clearly amended this; and though anomalous and exceptional cases often enough occur, "the average grand totals—according to a recent report by the Director of Studies—follow almost exactly the order of seniority of the several divisions." "Upon the whole, there seems no reason to doubt that the improvement in such subjects as arithmetic, algebra, and geometry, which, in 1874, was confined to the first two years spent at sea, is now commonly continued throughout their entire period of junior service."

Still, it must be remembered that this phase of the report of the Director of Studies deals with gross totals and averages; and amongst a very good average there may be some very small individual totals. Such there certainly are: and so far as the final examinations are concerned, it has not escaped the notice of those acute or so-called "clever" men outside who make it their business to help the shaky candidates through their examination, it has not escaped the notice of these that a pass may be possibly obtained without any mathematics at all, and

may very probably be obtained with an almost infinitesimal amount. This is really a very important consideration in discussing the state of scientific education, and is—at any rate—a very positive answer to those who maintain that the Service is choked by mathematics. The case really appears thus. The full number of marks obtainable is 1,500: and 750 makes a pass. Now of these 1,500, the purely mathematical papers, viz., algebra, geometry, trigonometry, and mechanics can bring 500: about half the paper known as the theoretical navigation, worth 100, may be added to this, and perhaps also the greater part of the 100 allotted for physics: even so, there remains, it will be seen, a possible 800, out of which to get the compulsory 750. Of course no one would attempt to get his necessary numbers in this way. No one who had developed such a supreme talent for doing nothing as to be quite out of the mathematical papers would have much chance of getting full numbers in the non-mathematical part of the examination. But a statement of the possibility shows that by judicious cramming, and a certain amount of that fortune which favours the brave, a very small and utterly useless minimum of mathematics may very well get a man his third class: there is no doubt whatever that it often does do so. Of course the small minimum may extend to many subjects not mathematical: for instruments and practical navigation, the candidate can scarcely help getting tolerably high numbers; and the deficit, distributed amongst the other subjects, does really not speak of any high attainments.

I have dwelt on this point, to show how it is that, notwithstanding the improvement in this respect which has undoubtedly been made during the last eight years, the mathematical standard of those Officers who, after their promotion, return to the College as voluntary students, is not to be depended on. Some, and—I am happy to be able to say—an increasing number, do come up to a respectable standard; but of those who passed out with a low third, and—as is commonly the case, more especially with men that took a third—three or four years have since elapsed, the knowledge of mathematics from an examiner's point of view, from an instructor's point of view—I fear I must add, from any point of view—is simply zero. Now anyone, by looking at the Navy List, can see that the third classes form a large majority; and though many of them are those who have just missed their second, perhaps by bad luck, and are occasionally better than some seconds, the general state of things is, as I have said, that a third class man, on coming back to the College, does not know any mathematics at all.

This it is that makes the course of elementary mathematics imperative, and at the same time irksome. A man who, even if he is not lazy, has, from natural bent, kept pretty well clear of mathematics all his time since passing out of the "Britannia," finds himself jammed into a corner at last. His position is a sort of parody on that of the famous Light Brigade—geometry to right of him, algebra to left of him, trigonometry in front of him—and he does not like it. I should very much wonder if he did. But as I have said, under the existing state of things, if the College mainly is to be, and

to remain—as it primarily was and always has been intended—a place of scientific instruction, then there is, at present, no help for it. It is a very great misfortune; for I do not look on this instruction in elementary mathematics, which now occupies the greater part of our time, as the work really meant, at the institution of the College, or outlined by the circular.

What I conceive to have been and to be still the idea is something like this:—That the Officers joining the College should be able to show that they have a good and competent knowledge of geometry, algebra, trigonometry, and elementary mechanics. So much mathematics any one can learn, if it is duly insisted on. Starting from that, they could, on joining, elect, within certain limits, their course of study, each according to his tastes, or the bent of his genius, if he has any. The gunnery and torpedo course is rigidly laid down: if all the men started from such a base as I have supposed, it might be made even more rigid. Of that, higher mathematics is essentially the backbone. I should be glad, myself, to see an advanced gunnery course corresponding to the advanced artillery course at Woolwich; not, of course, for all gunnery Officers, but for those who showed special aptitude for these studies. Such an advanced course would necessarily take time: even now, for our first class men, starting from a point very much such as I have described, the standard is severe; but, for selected men, the advanced course, extending over a second or even a third year, might take them very thoroughly over ground yet untrodden by naval gunnery Officers. I am far from saying that it is desirable to push on many naval Officers in this way, into high mathematics. For the ordinary course of the Service, I think it would be lost time: I may go farther: I think that, in most cases, a man who had devoted three years to abstruse studies such as I speak of would be unfitted for the routine of the Service. There would be loss of power both ways: the Officer would be spoiled, and the knowledge would be wasted. Still, I say, if any man shows exceptional genius, let it be encouraged and cultivated to the very utmost. The Service is wide, and can utilize it all.

Why, for instance, should not the armament of our ships be in the hands of naval gunnery Officers? Surely, it appears at first sight as if they, and they only, were the men who ought to have control over all things pertaining to it. As a matter of fact, they have very little to do with it: it rests almost entirely with the War Office, the Ordnance Department, the Gun Factory at Woolwich—or, in a word, the Royal Artillery. Now this control which the artillery Officers virtually have over naval guns and naval armament is a thing that I most frequently hear naval Officers growl about: they say that had naval gunnery Officers had any adequate voice in the matter, we should have had our ships armed with breech-loaders long since; that our ships would not now be inferior in point of armament to those of even China or Chili; and that there would be no doubt at all about the suitability and the trustworthiness of the new 6-inch breech-loaders. I am not now saying anything as to the merit of these growls: I am merely saying that they exist; and that they could not have taken this particular form, had our armament been entrusted to

the control of naval Officers; had it, in fact, been in the hands of the Admiralty, not of the War Office. Now no one will suppose that the Admiralty—I speak of it, of course, as an abstract body, not this Admiralty, or that Admiralty, or any other Admiralty—no one, I say, will suppose that the Admiralty, by preference, plays second fiddle to the War Office. If it does not insist either on a gun factory of its own, or an equal control over the existing factory at Woolwich, it is mainly that it has not a sufficient supply of Officers on whom it can certainly depend as competent to undertake the duty: and it has not this supply of competent Officers because it has not yet seen its way to institute, systematically, an advanced class; or to provide for the purely practical instruction of its members.

But our men do not all want to become advanced mathematicians, or gunnery or torpedo Officers. I would wish, then, the voluntary students to take up any line they like, and to follow it out persistently.

A man may, for instance, wish to study surveying and geodesy. These involve, of course, mathematics, though differing, in kind at any rate, from what is required for gunnery work: they also require practice in observing with the sextant, theodolite, and other instruments in the field or in the observatory. There need not be the slightest difficulty about his working at either the theory or the practice; about his devoting, if he chooses to do so, his whole time to such work. At the end of the session, he can scarcely help having some mastery of his subject: and, if it should appear to be desirable, he can go on for a second session. It will, of course, be asked whether the Navy has any use for surveyors or navigating Officers thus highly trained. I have, personally, no hesitation whatever in saying yes: it can use all it gets, or is ever likely to get. There is—I know—an idea abroad that surveying is a purely practical science. How such an absurdity ever became current I really do not know; but it is an absurdity; just as great an absurdity as it would be to say it is a purely theoretical science. To make a complete surveyor, theory and practice must go hand in hand, and be joined, into the bargain, to great natural gifts of eye, temper, and tact.

I have here spoken of two specialities, the most important, perhaps, considered as strictly scientific. But any other might equally well be followed. It is unnecessary to examine every case in detail: but the capabilities of the College, in such matters, are, practically speaking, unlimited. Whatever subject bearing directly, or even indirectly, on nautical science anyone may wish to study, that he can study. In some cases, perhaps, special arrangements would have to be made, but they could be made—and no doubt would be made—if only the first difficulty was overcome: if the bulk of our time was not taken up in working at the most elementary mathematics. Once do away with this necessity, and the course lies clear before us.

Is it possible to do away with this necessity? I myself think it is: I think that certain changes in the method of entering and in the education of our cadets might and would produce the effect we want. I know very well that this is a point on which there is a wide

difference of opinion. I will not, therefore, say that these changes ought to be made; I speak from the point of view of an Instructor on the College Staff; and so speaking, I think that certain changes would make the work of the College not only easier, but more satisfactory and of a better stamp. Of course, there are other points of view. The *raison d'être* of a naval Officer is not his instruction, but his utility as an Officer; the College is made for him, not he for the College; and it is not for me to say that his utility would be increased, that he would be better able to perform his multifarious duties by even the ideal improvement in the College work.

It is then, with this limitation, that I say that the real and sound knowledge of elementary mathematics can—as a general rule—only be acquired in boyhood: and that to attain such a standard as would speak of really lasting benefit, the age of first going to sea must be considerably increased. At present, it is between 14 and 15½: I would put it at between 15½ and 17.

Now of course a mere advance in the age would of itself do little. I would propose that our cadets should not only not go to sea till they are of this age, but that they should not be entered till they are of this age. I would say—do away with the “*Britannia*,” or any similar institution, and enter the boys straight from the shore—if by nomination and limited competition, then by nomination given several years beforehand—but, in preference, by a competitive examination, which, without being of a very high range, may be as thorough and searching as the examiners can make it. For very young boys, a competitive examination, even of the limited nature that now prevails, is, at best, a necessary evil: but at the age of sixteen or thereabouts, a boy, whose intellect and nerves will not stand the strain, had better not come to sea.

The tendency of any such examination would be on the one side to promote cramming, and on the other—as an examiner's defence against the crammer—to become continually more severe. Both these evils might, to a great extent, be guarded against, by allowing a very wide range to the examination. A thoroughly good standard in mathematics must, of course, be insisted on: but mathematics is a subject which, except within very narrow limits, cannot very well be crammed. It is not very difficult to set mathematical papers which will defy any mere crammer. But the word “crammer,” I must point out, has two meanings; and many crammers cram their boys with good, wholesome intellectual food, taking care that they digest it properly. But, beside the mathematics, I could wish the examination to turn on such subjects as a boy coming from a good school might fairly be expected to know; and on anything else that a boy is at all likely to know. There are few branches of learning, a knowledge of which does not benefit a naval Officer; so I would say, in such a competitive examination, admit everything, except a smattering.

Latin, certainly, but without a dictionary. If a youngster going to sea can really read Virgil, or Horace, or Terence, he carries with him a very large fund of intellectual pleasure and æsthetic culture. French, too, or any modern language—conversational if possible—

but certainly also, without a dictionary. History, geography, and literature ought assuredly to have a place; to some extent, perhaps, they ought to be compulsory. A boy of sixteen ought to know something of all, and be able to write a letter like a young gentleman. But as optional subjects, I would be willing to attach great weight to them; and in no pedantic spirit, I would be quite prepared to accept a fairly good knowledge of Shakespeare, or Milton, Byron, or Scott; of the Waverley novels, of Bulwer Lytton, Thackeray, or even Dickens, as evidence of a turn for reading and culture. Drawing is another subject, commonly spoken of as a mere accomplishment, but which to a naval Officer is often of very great use. I need not here point out how many of our naval Officers are accomplished draughtsmen and painters, some of whom have their pictures hung in Burlington House, whilst others frequently decorate the walls of the Geographical Society. I think any talent for drawing shown by a young candidate, in such an examination as I am attempting to outline, ought to be duly acknowledged. Some knowledge of natural science may be thought desirable. It is, however, a very wide subject, and one in which few boys of sixteen can have more than a mere smattering: nor, as a rule, are those few of a type likely to think of going to sea. Music, dancing, gymnastics, swimming, even cricket—I see no objection to any of them, though the examination might be difficult. We all remember that in an age when not much attention was paid to the education of naval Officers, Nelson spoke of French and dancing as the two things which every young Officer ought to learn. In the present time we are apt to consider these, the dancing especially, as mere polite accomplishments. I am far from admitting that the possession of polite accomplishments is not exceedingly desirable: it is one of those things which, as we used to learn long ago, "*Emollit mores, nec sinit esse feros.*"

But in every case, I think the first and necessary requirement for every candidate such as I have been speaking of must be a competent knowledge of mathematics. It is not that I for one moment propose to fill the Service with advanced mathematicians; but that I would insist on every boy entering the Service having a sound knowledge of those branches usually taught to boys of sixteen; a sound knowledge, that is, of elementary geometry, algebra, and trigonometry. With this foundation, all that is wanted further will come.

But all this, I may be told, is learnt in the "Britannia." I admit that it is taught: I am grievously in error if it is always learnt—as I understand learning, that is. The youngsters certainly pass out in these subjects—and in a good many more: but I am at liberty to doubt, and I do doubt, whether the passing out is any guarantee of real knowledge, knowledge that has become part of the boy's intellectual system, and will stick by him. I believe, and I can prove that that is very often extremely evanescent. I find, for instance, that in the fleet examination of July, 1879,¹ the average marks gained by those

¹ I refer to this particular examination because its results were discussed, more fully than is usual, in the Report of the Director of Studies.

young gentlemen who had been six months out of the "Britannia" were,—

in Arithmetic	32 per cent.
in Algebra	28 "
in Trigonometry.....	17 "

and whilst I know that many got numbers much higher than these, I know also that many got numbers much lower: I have therefore a right to say that many, and that the average of these young gentlemen had no real knowledge of these subjects. There are many reasons why this must be so. The "Britannia" course is nominally a very high one for boys of the age, and the number of subjects it embraces is very great. But, in preference to giving you any criticism of mine on it, I will read you the remarks on it made by Professor Soley, of the United States Naval College at Annapolis. They run thus:—"The course, as indicated by the examination papers, is far in advance of the mental powers of average boys of the age prescribed for cadets. The reason that more do not fail to complete the course is to be found in the low standard of passing, and in the system of cramming, carried out by clever tutors, who are masters in the art of coaching pupils for examinations. In seamanship alone the passing mark is relatively high, but the course of book and model work is one that presents no difficulties and exacts little concentration. For the other studies, no one among the persons acquainted with the system in England seems to pretend that the students come anywhere near the ostensible standard, or carry away anything like real knowledge of the subjects embraced in the programme."

No doubt the knowledge might be much more real, if the age was increased, as I have proposed, by eighteen months: but even so, I would almost equally object to the institution: the time passed in it may be much better spent at any good school, carrying on a general education, instead of forcing it into one narrow groove.

I might further make an objection to the "Britannia" on the score of expense, and say that there does not seem to me any particular reason why a number of little boys should be taught elementary mathematics at the cost of the country. The parents of the young cadets pay, for their instruction and maintenance, 70*l.* a-year; which does not differ by much, one way or the other, from the payment that would be made at many good schools. There is thus little, if any, saving to the parents, in having their boys in the "Britannia," instead of at school; but the cost to the country is simply enormous. It appears from the Estimates, that the expense to the country of each cadet on board the "Britannia" is, in round numbers, 300*l.* a-year. It is swallowed up in the repairs of the ship, and by the very large staff, Officers and men, which the ship requires. A school on shore, to contain the same number of boys, about 120, would be properly kept by perhaps a dozen housemaids, under a matron, and two or three men. On board the "Britannia" there are 210 seamen and 66 marines, or thereabouts, with the necessary complement of Officers, executive and civil; whose work, whose reason for being there, is

solely to perform the service of the school, and to keep a guard on the premises, which, on shore, would be very well kept by a gatekeeper and an honest dog. This is, however, merely an argument against the institution of the "Britannia" as a ship, or more correctly, as a hulk. But there is no doubt that an Admiralty school on shore, would not compare, in point of economy, with any private school of the same class. Numbers of such schools are maintained with profit by yearly payments of from 50*l.* to 100*l.* a-year: no one will suppose that a Government establishment, with the staff of Officers which would be insisted on, in addition to the teaching staff, could be maintained for anything like the same sum.

But this, I may be told, is a very low view to take of these things. If the "Britannia," afloat or ashore, is really to the advantage of the Service, and prepares boys for the sea better than they could be prepared in a general school, the country is rich enough to pay the cost. Be it so: my contention is therefore rather that the "Britannia" is not to the advantage of the Service: that it forces the boys' studies in unwholesome directions, and tends to narrow their intellects. I know very well what I am saying. I know that there are a great many good points about the "Britannia;" that the moral tone is excellent; that the physical development of the boys is most carefully attended to; but I still say that the restriction of boys' studies to a confined course is bad, and that the limitation of their acquaintance and conversation to those entering on the same profession is—if possible—worse. Everybody knows, and objects to the peculiar and narrow type of mind developed by the purely theological training colleges. The mischief of an institution like the "Britannia" seems to me similar in kind, if happily less in degree.

Then, of course, I may be told that the professional and other subjects taught on board the "Britannia" are of the greatest possible use—are, in fact, necessities. This I should meet by a simple denial. I deny their necessity, I deny their use. Navigation? Navigation most of all. So far from believing in its use, I believe that the forcing its study on young boys, by rule of thumb, and as a matter of practice, is a very great evil. The difficulty that they find in learning it, the difficulty that makes the constant practice necessary, is because they begin at the wrong end. They are forced to practise the rules without learning the meaning of them. The same objection applies to the so-called "practical" trigonometry. A boy has the rule given him, and is set down to work an example, doing, blindly and ignorantly, what the rule tells him. Put down these numbers or those, add here, or subtract there, take out several logs, and after some more adding and subtracting, there you are. Such rules are enough to choke any beginner; the wonder to me has always been that they do not actually choke them. But if little children are taken, and ordered to do certain questions in "practical" trigonometry or in navigation at the end of six months, and certain more questions at the end of the year, it is necessary that the working of such questions should be stuffed into them, if even by what Falstaff more forcibly than elegantly described as "damnable iteration," an iteration sickening alike to the teacher

and the taught. I have no hesitation in saying that any intelligent boy of sixteen, who knows as much mathematics as such a boy ought to know, and easily may know, if his attention is at all specially directed towards mathematics—any such boy of sixteen, I say, will learn more navigation in a month than the poor little fellows in the “*Britannia*” learn in two years; and having learnt it, will really know it—know it, that is, in a way that he can never forget.

On this subject of learning navigation there is an astounding deal of nonsense commonly talked. There is an idea that navigation is a great mystery, one that requires a lifetime to learn and to practise. There are, it is true, many points connected with it which do require great care and experience; but they are just the points that a youngster cannot possibly learn. Amongst such I would put the management of chronometers. I wonder how many youngsters in a sea-going ship ever saw a chronometer. Most assuredly no youngster ever had any idea about the details of rating them: but such details do not take long to learn, when the necessity occurs, when the responsibility comes. Five minutes will teach him how to wind them up; and if he has already learned how to find the error, confidence only is wanted to enable him to rate them. But the mere science of every-day navigation can be thoroughly learned, certainly within six months, by any one who has a sound knowledge of elementary geometry, algebra, and trigonometry.

French, also, is taught in the “*Britannia*,” neither worse nor better than in the majority of schools on shore. Elementary physics too; but I never heard that anyone was the better for it. Judging from the examination papers, the course would seem to be a high one: too high for boys of between fourteen and fifteen. Judging by the results, I conclude that this is also the opinion of the boys themselves, for they display a very general unanimity in getting no marks in this subject. There are, beyond doubt, numbers of modern schools where physics and French are taught much better, if only because more time is given to them. That, in the “*Britannia*,” is impossible, because such a large, such an undue proportion of the time is wasted on teaching mathematics and navigation from the wrong end. But if it could once be accepted that the theory of every-day navigation is simply the application of certain elementary formulæ in plane or spherical trigonometry, and that the practice of it is little more than the application of the first four rules of arithmetic; if it could once be realized that the knowledge of trigonometry ought to precede, not to follow the practice of navigation, I believe much might be done. I believe, for instance, that people might begin to think that boys might be brought into the Service from a boys’ school, not from a dame’s, as I am told, they now sometimes are. I have heard of one who came direct from the governess of his childhood. People might begin to think that there was no necessity for the country to pay some 300*l.* a-year for every little chap who was being taught his trigonometry wrong end foremost; and that instead of entering naval cadets, as now, at twelve or thirteen, they might be entered at sixteen or seventeen, when they might be expected really to know something,

and might fairly enough be required to show that they did know something.

Well, then, the great objection to all this is included in the assertion that boys must come to sea at a very early age, or they will never make either sailors or Officers. I rather think that a great many who raise this objection do so without recalling the fact that our newly caught children do not go to sea; that they spend two years on board a hulk, and have their first taste of sea-sickness, in the Queen's Service at any rate, at the average age of fifteen. My proposal is thus not very radical: it adds about one year to a boy's average age; but it adds *three* years to his time at school, perhaps the most important three years in a schoolboy's life, the three years when he is learning and beginning to understand that he is meant to be an intelligent and reasoning being. The confusion about these first two years spent on board the "*Britannia*," and the consequent idea that, in some unexplained way, our cadets do go to sea at a very early age, is probably at the bottom of this objection. Professor Soley, indeed, takes another view of it. He says:—

"In the English Service there seems to be a theory that a naval Officer is a creature of delicate and sensitive organization, whose regard for his profession and whose zeal for a high standard of professional attainment must be stimulated by surrounding him eternally with all its minor details, to an extent unknown in any other walk in life. To make a sailor, he must begin at twelve or thirteen, even though he does not go to sea for two years, to accustom him early to his duties. During these two years he must live on board a ship, and be able to climb the rigging, to familiarize himself with details; though the ship lies at anchor in a river, a few yards from the shore, and carries no spars but her foremast and head-booms. He must sleep in a hammock, to inure himself to hardship."

This is the way it strikes an observant foreigner, with very special opportunities for forming an opinion. Amongst ourselves, it is said that by going to sea young, a boy learns seamanship with a thoroughness that on any other system would be impossible. Is this correct? We do not know much about any other system, for we have not tried any other: no doubt, in former days, the still existing system of sending little boys on board ships on active service, to learn seamanship by doing what they were bid and keeping their eyes open, answered *pretty* well. I do not think it did *very* well. Of course, we turned out a large number of first-rate seamen; but it was out of an enormous number of entries. No account can now be taken of the number of failures: but of those who through ignorance, drink, and immorality went wholly to the dogs, the number was extremely large: and of those who did not thus utterly break down, there were a very great many who dragged on in the Service, as ignorant of seamanship as of everything else that was reputable.

But still, the opportunities for an active, intelligent, and enterprising boy were there: he might learn seamanship, if he chose. How different these opportunities were from those of the present time, many of you know by personal experience. Just as a reminder for those who

do not, I may quote a perhaps extreme instance, mentioned in one of Sir Henry Codrington's letters, May 11, 1840:—"The 'Talbot' has now been about two years and two months in commission, and in that time has weighed and catted anchor one hundred and fifteen times." And independently of the daily routine of watch-keeping, the beating up to an anchorage with the hands on deck was then, as ever before, and for fifteen years afterwards, a matter of frequent occurrence. I myself have a vivid recollection of a whole day spent in beating into False Bay and Simon's Bay, in one of the last of our sailing line-of-battle ships, in July, 1856.

But now, the tacking or wearing a ship is almost a matter of tradition: a ship goes in or out of harbour under steam; and if, at sea, she plays at being a sailing-ship, she has the screw all ready to help her in the slightest difficulty. I find it is no unusual thing for a midshipman to have served his full time without ever having seen a ship tacked; and, yet, to pass his examination with a first-class certificate. I cannot think this is right. Of course much abuse is lavished on the examination and the examiners, as though they neglected or were careless of the trust reposed in them. I have no doubt whatever that the examiners do their duty fairly and conscientiously; but the examination is based on the custom of old, and has not kept pace with the present requirements. Formerly, if a lad showed that he was intelligent and had kept his eyes open, could answer a few questions of detail, and produce a neat and well-kept log, the inference was that he could do fairly well the things that he had been necessarily helping to do for the last six years; so that the examination was mainly a gauge of the candidate's intelligence. Now, things are on a totally different footing: there is no presumption at all that a young Officer has ever seen any of the manœuvres about which he is asked, or knows anything more about them than what he has learnt by rote out of Nares, or Alston, or Boyd, or by dictation from the boatswain. This being the case, I think some other form of examination might be devised. No one would think that the skill of a musician or a painter can be fully tested by asking him a few questions about counterpoint or chiaroscuro, or in fact in any other way than by seeing the pictures of the one, or by hearing the music of the other: and by a parity of reasoning, the best idea of a sailor's seamanship is to be gained by watching him in the performance of his duty on board ship. I should therefore like to suggest that the examining Officers might once a month take out the candidates to sea for a week's cruise; exercise them as Officers of the watch, and otherwise; and notice and report on not only their knowledge, but their readiness, and their tact: if they could get into bad weather or a moderate gale of wind, so much the better; but if not, what children call "make-believe" might go a long way. Of course there are many points of seamanship, many points of detail, which the candidate is expected to have committed to memory, and to be able to repeat; but I cannot but think that in an examination on a thoroughly practical subject, too much stress is laid on these, whilst all practical work is excluded. I know of one case in which a candidate not only got his first-class, but was specially compli-

mented on his attention and zeal, mainly—as he himself believed, and as I believe—for answering in detail a question as to the rations of the ship's company; and I also know that he learned the scale of provisions by heart just five minutes before he left his ship to be examined.

In dwelling on these points I am merely expressing a very general feeling that the examination in seamanship is not quite satisfactory. If it was only the examination that was not satisfactory, it would be a very trifling matter; but it is commonly enough urged that the standard of seamanship itself is not what it ought to be. I do not see how it can be. A youngster serving his time on board a first-class ironclad has but the most limited opportunities, at distant intervals, of seeing any seamanship, and may very well go up for his examination with no more practical knowledge of it than he had on the day when he first went afloat. Even of kindred matters which have always been included under the head of seamanship, he does not learn much. I have heard senior Officers, who had had undoubted opportunities of judging, say that in such matters as rigging a derrick or transporting a heavy weight, the average Sub-Lieutenant of the present day compares unfavourably with the young artillery Officer, who has been carefully taught what the naval Officer has been left to pick up when and where and how he could. I have here embodied the opinions of competent judges amongst ourselves, as to the result. I should like to repeat to you Professor Soley's opinion as to the system which produces the result. What he says is this:—

“Whether midshipmen get an adequate professional training under the English system is a question about which it is difficult to get the data necessary for a satisfactory answer. Much can undoubtedly be done for them if the Captain is so disposed; but unless there is some prescribed system for him to follow, he is not likely to give them the attention they need. The Captains of those great ships have had far too serious work on hand for the past few years, to sacrifice anything even to the professional training of junior Officers. What duties, for example, are given to the sixteen or twenty midshipmen on board the ‘Alexandra,’ the ‘Minotaur,’ the ‘Achilles,’ or the ‘Iron Duke,’ which train them in practical seamanship? Of practical navigation, as far as it consists in taking sights and laying out courses, they undoubtedly get much; but how are they to acquire the needful skill in the management of a ship under sail or steam, the practised eye for wind and weather, the ready resource, the rapid and unerring judgment, that distinguished the old seamen, and that are almost as necessary for the seamen of to-day? These things, which alone can make a man an efficient watch-Officer, are at present only to be learned by the unsatisfactory process of ‘picking up;’ and it is a question whether more would not be learned in a year's practice cruise in a real training-ship than in five years of midshipman's duty on board an ordinary man-of-war. Certainly, if the first of these five years was so occupied, the midshipman would arrive at his seamanship examination better prepared in the most essential subject—the practice of manœuvring ships under all circumstances of wind

and weather;' and his promotion would find him better qualified for performing the duties of Officer of the deck."

There is much in this that I cannot help agreeing with. I cannot help thinking that a ship, on active service as a ship-of-war, is, now-a-days at any rate, no more the best school for seamanship than it is for any branch of nautical science.

We have every reason to believe that the Admiralty are keenly alive to this great and growing evil; and we know that whilst they do not yet feel it advisable to take radical measures to remedy it, they are doing what they can with the means at present available. Only last night, in his official statement to the House of Commons, Mr. Trevelyan said:—"The Admiralty have adopted another policy, and have issued an order that the Commander-in-Chief for each station shall collect his ships every season for a combined cruise, in which Officers and men may be trained in sailing and in manœuvres performed in company; and anyone who reads the most interesting despatch of Admiral Willes will acknowledge the success which has attended this order. That despatch is accompanied by a Return from each ship, stating the number of days she has been under sail, the number of times she has tacked and wore, and the number of times she has gone in and out of harbour under sail alone. The last words of the despatch run thus:—"The result to the crews has been an improved physique and knowledge of their profession which cannot be measured in figures, but which, I hope, may be manifested hereafter. If carried out every year, the China station may be reckoned one of the best training-grounds for young seamen." With such a training-ground on every foreign station, with the Channel Fleet, the Mediterranean Fleet, the Coast Guard Fleet, the Detached Squadron, it may safely be said that it is many years since there has been such an amount of practical training of our men and Officers as in the last twelvemonth."

This is a very great step in advance, more especially in the promise it holds forth of increased opportunities for squadron manœuvres. As a school of seamanship it will no doubt be good, as far as it goes: but I am not prepared to believe that a cruise of two or three weeks once in the year—which the requirements of the Service may any year put a stop to, or which, at the caprice of a Commander-in-Chief, may be pronounced a bore, and got through in a most perfunctory fashion—I am not prepared to believe that such a cruise, even at its best, will compensate for the loss of the continual, the every day, the morning, noon, and night exercise of the olden time. I think some more drastic remedy is wanted.

I am no blind admirer of the practice of foreign nations: I do not think a thing necessarily wrong because it is English; or to be implicitly believed in because it is French or German; but in looking round, and seeing what is going on abroad, how our possible enemies are training their young Officers, and more especially in seamanship, I am compelled to say that some system such as that which prevails in the German Navy seems to me capable of being advantageously adopted, with some considerable modifications, in our own. I do not now speak of the way in which the German cadets are entered, or of

the preliminary training which they receive. The conditions of English life and of English schools are so different from the German, that the German conditions of entry would not commend themselves to the English. But what I here call attention to is the systematic instruction which the young German Officers receive, not in seamanship only, but in everything connected with their profession, whether practical or theoretical. And the way it is done is this. After about eighteen months' preliminary training and schooling, the midshipmen are sent on board a sea-going training-ship. Every year, one such starts from Kiel, on a two years' cruise, during which she goes round the world. The ship commissioned for this special service is a screw steamer of modern type, and fully rigged; armed with breech-loading guns, and supplied with all the appliances and equipments considered necessary for a training-ship. Amongst these, is a complete library of professional works, and works of history, poetry, and fiction, in German, French, and English.

For duty on board, the midshipmen are permanently divided into four watches under the four division Officers. These watches are rearranged every quarter. When the ship is under steam, the midshipmen do watch duty in the engine-room, where they receive instruction from the machinist in charge. When the ship is under sail they are stationed in turn as the midshipmen of the tops. In port, each acts in turn as signal Officer. They act by turns as gun-captains at great gun exercise, and they are sent in charge of boats. In foreign ports they are organized in parties to visit places of interest; they are encouraged to go to balls and social entertainments, and are given every possible opportunity of conversing in foreign languages.

The theoretical instruction—about sixteen hours in the week—includes navigation, steam-engineering, seamanship and naval tactics, gunnery and torpedoes, official duties and organization, shipbuilding, English and French. Navigation, gunnery, and engineering are taught by the navigating and gunnery Officers and by the Engineer, respectively. Instruction in the direction and care of the ship's stores is given by the Paymaster, and the subjects are assigned to the various Officers of the ship according to their qualifications.

At the end of the two years' cruise the Commanding Officer sends to the Admiralty a full report of the proficiency of the midshipmen, and a provisional rank list. The midshipmen receive certificates of service, drawn up by the Captain with the assistance of the Officers, containing a statement of their character, fitness for the Service, and general scientific attainments. The reports and certificates state particularly whether the midshipman is out of debt, and whether he is considered worthy of admission to the Service as an Officer. Those midshipmen who receive favourable certificates are ordered to Kiel to pass the first Officer's examination.

Now, as I said, this idea of a thoroughly sea-going training-ship seems to me one worthy of your attention. There are many parts of the German system which I cannot believe good; it seems to me to require too high a scholastic standard, to consider that scholarly attainments are the first requisites of a naval Officer, and to ignore

the fact that his chief duty, the very essence and reason of his being, is to govern men as an Officer, to handle his ship as a seaman, and to wage war when necessary to the safety and the glory of his country. Now poetry and romance and even science on one side, war is now, as it always has been, "a brain-spattering, wind-pipe-slitting art"; and it is in training for that, rather than in poring over books at college, that the young Officer should be formed. But the two years in a training-ship seem to me clear of this objection, and might, I think, be profitably and without difficulty adapted to our own requirements. With this as a start, and two years more of active service, I believe the young Officers would come up for their examination better prepared in every way than they do.

It has been proposed that after the examination for the rank of Sub-Lieutenant, there should be another, perhaps three years later, for the rank of Lieutenant. If so, it should be in purely practical and professional subjects. Any mere general and theoretical examination hanging over the head of a Sub-Lieutenant would tend to draw him off from the study and practice essential to a seaman and an Officer. There is, on board our ships, plenty of work for numbers of junior Officers—often more than we now have junior Officers to do: and however brilliant an examination a Sub-Lieutenant may have passed, there is, on board our ships, plenty for him to learn, plenty of needful experience to gain. When he has gained this experience, when he has got his promotion as a Lieutenant, then is the time when he might be encouraged, as now, to go through a voluntary course of study, and to develop such specialities as he has a natural inclination for: but under some system such as I have here suggested, the result might, I conceive, be very far ahead of anything we can now attain. I have already referred several times to Professor Soley's Report: I will conclude with one more quotation, which seems to me worthily to sum up the argument, at any rate from the instructor's point of view:—

"If the naval profession has become what many enlightened Officers of the present day would have us believe, an occupation involving accurate scientific knowledge, the system of training in England has a tendency to grasp the shadow while losing the substance. The expedients adopted with reference to the higher education of voluntary students, and the admirable courses of instruction for Officers who have taken up one branch of the Service, notably in the 'Excellent' and 'Vernon,' do much to remedy the inherent defects of the system; and the promotion in two grades by selection excludes the most incompetent Officers from positions of great responsibility. But it seems impossible that the injurious effects of the method of training pursued with young Officers, during the first eight years of their professional life, should not be felt by the vast majority throughout their whole career. The peculiar features of this training have been already pointed out: the discouraging efforts in the 'Britannia' to attain a point hopelessly beyond the young student's reach; the five years of desultory training on board the great cruising ships, passed in a struggle to retain and comprehend a

mass of undigested facts and principles, crammed for the immediate purpose of passing an examination; and finally, the review course, where the student first finds himself fairly on his feet, in his relations with his instructors. No one who has had much experience in educational methods will deny that such a system must be productive of harmful results when applied vigorously to the training of a body of young men; and one is therefore led to the conclusion that the high scientific and professional attainments of many English naval Officers are not in consequence, but in spite, of their early education."

Captain CURTIS: I was educated at Christ's Hospital, and I think it is a very fair criterion to compare general naval theoretical education with that of Christ's Hospital. There was one reference made by Mr. Laughton with respect to artillery Officers and naval Officers; now, if Mr. Laughton has not heard of it, I can inform him that naval Officers showed some artillery Officers how to bring the guns to the front at Balaclava. Whether it was the seaman or the Officer, we must give the Officer the credit; he clapped the gun bottom up or vent down, clamped the carriage, trucks up, and par-buckled it up, whilst the artillery Officers were waiting for sheers or triangle. A sailor can make shift, but a soldier generally wants things to hand that he has been accustomed to use. Then they made the leading horse go into the shafts (at Alma, I believe) when they said the horse would not, and helped to get the guns to the front. I imagine the naval Officers did their part with the guns at the bombardment of Sebastopol, as well as the artillery Officers. I think that you may take the first order of Christ's Hospital as a very fair criterion of what boys may learn by 15½ or 16 years of age. I must admit I have forgotten all I have learned, or a great deal of it, inasmuch as I did not know the rudiments thoroughly, and the master had too many boys to instruct. There are four or five boys in the order generally who thoroughly understand the rules and do the work, and the other boys get on as they can. We went up to Trinity House and had three days' examination, and we all passed. After that I joined the "Queen," and I have no hesitation in saying that we of 16 who had been to school were of more use than those who went to sea at 12 or 13. Naturally, I wanted to learn seamanship, and when I went to the "Queen," we, the elder volunteers or cadets, took every opportunity of getting away surveying, or lent to smaller ships, and I must say we had a most conscientious naval instructor. I never went to school, but I passed my examination as a midshipman. I next went into the "Calypso;" there the Captain made me do the duty of boatswain's mate, or mate of the main deck, and I was not allowed to go to school, and never was allowed time to learn the gunnery book when I wanted to work up for passing in England. When I came home from that ship I applied to join the "Excellent," but was not allowed. I went to Portsmouth, attended daily on board the "Excellent" for a month, did the usual grind for a week with a Mr. James, a very efficient teacher, and passed third in navy alone out of seventeen that passed. I went to the Admiralty when promoted shortly afterwards, and asked for an appointment. I was met with the question, "Have you a steam certificate?" "No." "Then you cannot join a ship." Three of us that qualified as steam Officers together were, strange to say, appointed to a ten-gun brig; two joined and were sent to the coast of Africa. I was kept there four years, and I must say by the time I came home, the steam was pretty well knocked out of me. That is my experience, and if you want to know what a boy can do at 16, I should say take the paper of the first order at Christ's Hospital. They learn French and German now, and they will work a college sheet with any Officer up to a Sub-Lieutenant. As to the hardship of sleeping in a hammock, I have had to sleep six months in a boat with nothing softer than a blanket upon the top of a thwart. To run the rigging with sixty men behind you is no joke. Sir Edward Owen exercised the boats of the fleet in 1842 every Friday. I do not know whether the fleet exercise them now once a week, but when a ship is by herself, I think her boats should be exercised once a week, "if not," it should be noted why, in the log.

Vice-Admiral Sir J. EDMUND COMMERE, K.C.B., V.C. : I will commence by quoting from Mr. Laughton's very excellent paper the following words : "The very essence and reason of his being is to govern men as an Officer, to handle his ship as a seaman, and to wage war when necessary, to the safety and the glory of his country." I think we all agree that that is the very essence of what we should endeavour to make in an able Officer. I must say, however, that I disagree with Mr. Laughton in two particulars which he has mentioned. One is as to the question of youngsters being subjected to competitive examinations at the early age of 12½. I think we have all lost sight of one fact, namely, that boys all over the world develop unequally. They are like plants. The plant that grows quickly is not always the one that is lasting. There may be many physical reasons which prevent boys developing at such an early age as 12½; and there may be other reasons—reasons of the pocket. There may be reasons in the case of a poor unfortunate woman, left a widow at an early age, with half-a-dozen children, which will prevent her educating her boys in such a way as to enable them to pass a competitive examination at 12½; and the result would be that those who, from the possession of wealth, are enabled to educate their boys earlier in life—to cram them—that unfortunate cramming which I believe brings the very greatest possible amount of misery into the Service, and enable them to get their sons into the Service very much to the disadvantage of the poorer members of the naval and military profession. I should be very sorry indeed to see boys going into the Service at the age of from 16½ to 17. When I was staying at Annapolis for a fortnight, I had the opportunity of talking, not with professors, but with naval Officers, who are, after all, the men who must know best what boys we want, because they have to deal with them after they enter the Service. I had, I say, an opportunity of talking with them; and the general opinion I gathered from them was this: that they found their young men, though very clever, though very talented, and thoroughly up to dancing, and thoroughly up in many scientific subjects, at the same time came to sea without any knowledge as to how to command men. The result was that they talked to the men in a way which would prevent them doing their work, and irritates them. They did not know their wants; they did not understand their peculiarities; in fact, they were perfectly incapable of dealing with men or commanding them. That, I believe, is the principal thing we ought to look for. It is absolutely necessary that our youngsters should enter into the Service at an early age, that they should be trained up in bodies, that they should be trained up on the deck of a man-of-war, where they will learn thorough discipline, and will therefore be enabled to exact discipline from others, because they know how to ask for it in a proper manner, and in a kindly spirit. I had a discussion some three or four years ago with an American Admiral, a very distinguished man, who had served his country long and well. He remarked, "I know very well it will be said that we old fellows look upon education as a bad thing. Now, I do not look upon education as a bad thing; but I look upon it that too much education, to the neglect of other duties, is a very bad thing. I look upon it that if you cram a boy too much with mathematics and do not teach him to be a seaman, and do not teach him how to command men, you will not produce the article that you require." Now, I know perfectly well that what Mr. Laughton says is, no doubt, perfectly true; namely, that the exercise which our lads have at sea, on board our ironclads especially, is very little indeed. I know perfectly well that those vessels are a long time in harbour; and when they do go to sea, unfortunately they do not use their sails many times when they might do so; they have their screws always handy, and depend upon them rather than upon the sailing power of their ship. At the same time, there are other ways of training. I quite agree that the system of passing two years in a training ship is an excellent one; but I am not quite certain of this, that boys being employed, for instance, in furling and making sail, though to a certain extent it may teach them to do what they have to tell others to do, will, at the same time, always give them a power of command. We know perfectly well in our experience at sea, that the best boatswain is not always the best officer of the watch; that when he gets on the quarter deck, he is not able to direct his men as he should, his fingers are itching to do it himself. I will say no more. I am quite certain of one thing, that education in the Naval Service for our youngsters is most

desirable; but I do hope we shall not be forced, as naval Officers, to see that our youngsters are crammed too much.

Lieutenant C. CAMPBELL: As the Council have decided to publish an essay written by me in competition for the gold medal, upon a subject somewhat analogous to the present one, I will only venture to offer one or two remarks to-day. It seems to me that the first suggestion made by Professor Laughton is to do away with the "Britannia," and to send the lads to us at the age of 16. I, for one, after much reading and searching after truth in many places, am clearly of opinion that such a proceeding would not be a benefit to our Service. I am rather in favour of one year more in the "Britannia," and then to send the youngsters by means of a circulating ship to our cruisers all over the world, keeping them out of the large ironclads during their early years, when their construction is a subject too difficult for them to grasp. A boy at school is longing to get to the "Britannia;" a boy on board the "Britannia" is longing to get to sea; a boy at sea is longing to be in his second ship instead of his first; it all does good; and I should be very sorry indeed to see the "Britannia" done away with, where I know that I learned so much in the way of mathematics, seamanship, cricket, swimming, and boating, and getting a taste and liking for sea life before actually trying it at sea. Another point is as to the seamanship of the young gentlemen of the present day. As First Lieutenant of a large ironclad at the present moment, I should not like the idea to pass unnoticed which Mr. Laughton has put forward with regard to the knowledge that our young gentlemen possess. I have a very much higher opinion of their knowledge than he appears to have. He gives a description which rather sounded like a story in one of Captain Marryat's novels, where the Captain asked the young gentlemen to dine, and put them to carve a chicken. If they did that very well, and the Captain knew the boy's mother, or something of that sort, he was perfectly satisfied, and passed them. Now, Mr. Laughton has given us very much the same idea where he says that a young gentleman went on board, and because he could answer the questions about the rations of the ship's company, he was given a first class certificate, and highly complimented upon his ability as a seaman. My experience in the Channel Fleet, extending over ten years, does not coincide with that view of the matter. I believe the examination is a most difficult one. I know that in the ship on board of which I have the honour to serve, the youngsters have a most thorough knowledge of everything connected with the seamen's duties; and they are not left to the boatswain. Every evening, from 8.30 to nearly 10, the senior youngsters attend aft on the main deck with the First Lieutenant. They have to get their lower masts on board, cross royal yards, and take the ship from her moorings, to sea; they get very rough weather, every sail is carried away, and they run ashore; they have to lay out anchors in boats, and, in fact, go through everything. Many youngsters are really able to do this and to answer well; and I may say there were four first classes out of the ship of which I am speaking. One got full numbers, another 965, and another 960, out of a possible thousand; therefore it cannot be said that those youngsters only know about the rations of the ship's company, although it is desirable that they should know about that, and about all other matters connected with their duty.¹

Admiral Boys: There is one paragraph in Mr. Laughton's lecture which I should not like to go forth to the public, as it stands; in fact, I do not think it conveys the impression which it is intended to convey. Mr. Laughton says, "Why, for instance, should not the armament of our ships be in the hands of naval gunnery Officers? Surely it appears at first sight as if they, and they only, were the men who ought to have control over all things pertaining to it. As a matter of fact, they have next to nothing to do with it; it rests entirely with the War Office, the Ordnance Department, the Gun Factory at Woolwich, or, in a word, the Royal Artillery." That is really not the case. The War Office has nothing more to do with the arma-

¹ I quoted the ship in which I am serving, in order that the evidence might not be second hand. The best midshipmen that have ever come under my notice were brought up in large ironclads in the Mediterranean, taking their turn of service in the "Cruizer" sailing corvette, attached to the fleet for the purpose of instruction.

ment of our ships than to provide the guns which the Admiralty require. Of course the description of each type of gun is, to a certain extent, at the discretion of the Ordnance Department of the War Office, but no guns for the Navy are constructed without the full concurrence of the Admiralty authorities. The statement is therefore not correct, as Mr. Laughton has put it. I do not think he could have intended to convey that the Admiralty had nothing to do with the armaments of their own ships, because the Admiralty actually do arrange the armaments of their ships. Then he says, "Now this control which the artillery Officers virtually have over naval guns and naval armament is a thing that I most frequently hear naval Officers growl about." We know naval Officers do growl; it is natural to them. "They say, that had naval gunnery Officers had any adequate voice in the matter, we should have had our ships armed with breech-loaders long since." This is not the occasion to discuss breech-loading and muzzle-loading guns. I would merely observe, that the breech-loading gun of foreign navies was not, in my opinion, a bit better, or so good for the Naval Service as the existing type of muzzle-loading English gun. I am not alluding to the new breech-loading guns; I can actually prove, from facts and experiments, that our old M.L.R. guns were quite equal to the guns in use in other navies for practical work; though I will not say so scientifically constructed. Perhaps in some reports foreign guns are made out to be better than our own; I will give you one instance of an experiment that took place in 1868 or 1869 in Germany, where an English muzzle-loading 12-ton gun was pitted against a Krupp gun of 14 tons. The theoretical ballistic effects were decidedly in favour of the German gun; but the actual penetration into iron plates was from 15 to 20 per cent. in favour of the British gun. It was mainly a question of gunpowder. I must say I agree with Mr. Laughton, that there is room for the more general employment of naval Officers, if not in the construction, certainly in the fitting of guns for the Naval Service. I do not see how it is possible now for the Admiralty or the Navy to have a gun factory of its own; but I think the time has arrived when the fitting, the mounting, and the mechanism for working should be placed in the hands of naval people, and the War Office relieved of that duty, because there is nothing now in the mounting of naval guns that is interchangeable with the land service. It is entirely a naval matter; and should be left in the hands of the Navy. With regard to the time of entry of naval cadets, I quite agree with Mr. Laughton. I think that there is no advantage in the competitive examination of a boy between 12½ to 13 years of age for future naval Officers. It is an inconsistent thing. It is simply an examination of their mothers or governesses, or the preliminary schools they may have been at. Some years ago, when the boys about that age used to come to Portsmouth to be examined (not then by competition), the late Admiral Chads was Superintendent of the College. Some naval cadets came up for examination; one or two were rejected. Some one happened to come into the room immediately after the results were given out, and saw one of these unfortunate boys with his arms round the Captain's neck, crying bitterly, and begging him to let him through. That was a candidate for the position of a future naval Officer. I agree with Admiral Commerell as to the development of the intellect of boys varying between the ages of 12 and 18. One I know especially, who was a brilliant lad—gained a scholarship at a public school at 13; but as he grew older, and reached the age of 17 or 18, although equally industrious, boys that he could beat easily and readily at an earlier age, got up level with him, and many of them passed him. He rose up again afterwards to a certain extent; but I think that is generally the case with boys at that period of life. I think the age of their going to sea would be well deferred until they are over 16. It is not absolutely necessary in these days of steamship rather than seamanship, that in order to make future naval Officers, boys should begin so early as they used to. It has been said that they must do so to get accustomed to hardships; but really there are now no more hardships in the Navy than most boys have to go through in public schools. I think it would be well, therefore, to defer the age as proposed by Mr. Laughton. I am sure we are very much obliged to him for the very able paper he has read to us, and in most of which I quite concur.

Captain BRIDGE, R.M.: I wish to say just one or two words on behalf of voluntary students. For two years I was a voluntary student at Greenwich; and I found

that out of 33 hours a week to be devoted to study, 18 were compulsorily given to mathematics. There were about 60 voluntary students; and I am positive that 59 out of the 60 detested mathematics, and wished to give their time to such subjects as languages, surveying, fortification, tactics, chemistry, photography, or science of some sort. They found, however, that they were obliged to devote the three best hours of the day, namely, from 9 to 12 o'clock, to mathematics; while languages and other subjects were consigned over to the afternoon, drawing among others, when the light was bad. In order to make the College popular—and I fancy it is the wish of all naval authorities that that should be done—voluntary students should not be compelled to learn mathematics. Officers who go there voluntarily should be allowed to select their own subjects of study. At the end of every three months, an examination should be passed to show that they had made certain progress, and devoted themselves to those subjects of study; and the Officers who had not made the progress which might be demanded should have their *congé*. I believe it is only a matter of time when a Naval Intelligence Department must be established; and, for that purpose, you must have naval Officers linguists. When I was at the College, we used to get two hours French a week, and two hours German; and if we took up drawing, we could not learn Spanish. I am sure the hours of the morning, instead of being given *volens volens* to mathematics, would have been much better devoted to languages. With three hours of obligatory continuous mathematics, the mind became jaded, disgusted with study, it had no wish to learn; and the object was, if possible, to shirk the afternoon work. I think when Officers go there voluntarily, they should be treated as men, and be allowed more liberty, and the College should be more like an University, and also that the hours should be from 9 to 1, or from 9 to 2; during these hours, lectures should be given, and after that Officers should be free. I think that these changes would render the College more popular; and I feel thoroughly convinced from my two years' experience, and from the opinions expressed by a great number of Officers with whom I have conversed on the subject, that mathematics ought not to be made a *sine quâ non*. These remarks are not intended for such students as Gunnery, Torpedo, probationary Officers, Royal Marines, or Sub-Lieutenants, but for students who go there with the wish of perfecting themselves in some particular branches of study. I naturally suppose that all Officers have a knowledge of elementary mathematics.

Captain CLEVELAND: Although there is a very great deal in what Mr. Laughton has said with which I agree, there are still two points on which I would venture to dissent from him. I agree with him as to the age at which naval cadets should enter the Service, for although their physical and moral status is all that can be desired, I cannot take the view of their intellectual status that was taken by Lieutenant Campbell. Intellectually I do not think they are up to the mark; it is a great mistake to send youngsters up for competitive examination at so early an age. I do think, however, that the Naval Service requires that lads should be entered very early. The training requisite for sea life can only be acquired in youth. I would, therefore, enter them at the same age as now, but instead of sending them to the "Britannia," which I would abolish, I should send them in a ship to sea. They then after a certain time, say a year and a half, or two years, should, if found fit by examination for the Naval Service, commence their technical education, but not before. I differ entirely from what the last speaker said with regard to mathematics, for I look upon mathematics as the base of all scientific knowledge; unless you know mathematics you cannot learn surveying, you can know nothing about gunnery, or indeed anything that an Officer should know. With regard to the question of the manufacture of guns, I differ with Mr. Laughton. I do not look upon this question of gun manufacture as a question for the naval Officer, but rather as a question for the engineer. Naval Officers have the power of saying what guns they require, and then those guns are designed and made by engineers, but *qua* naval or *qua* military men, I entirely object to those men being the manufacturers of our guns; what we want is the *best* men, let us find them where we may. We have had an extremely interesting lecture this afternoon, and I agree with Mr. Laughton in very much that he has said; but the above are the main points in which I differ from him. Certainly, on board an ironclad, youngsters have very

little opportunity of learning more than just the routine work, which they may learn from a book, but where they are looked after, they no doubt learn something; no Captain would ever trust an ironclad to a young gentleman to work, as the Captains of old did their frigates; an ironclad is not really safe under sail, and the most they can learn is in the engine-room.

Captain NOEL: Mr. Chairman and Gentlemen, I think every one will agree with me that the question before us is of intense importance to the Navy. The matter of education is one in which every naval Officer should interest himself, and with which he should be exceedingly jealous of interference. I think we should regulate our own education, and perhaps Mr. Laughton has rather overstepped the mark when he volunteers to tell us how we are to teach our youngsters seamanship. Anyhow, I must say I think some of his remarks on naval Officers were not very palatable, and I hope that we have not arrived at quite so low a degree of seamanship or instruction in that science as he intimates. I wish to say a few words about the Royal Naval College. I have had the opportunity of seeing the work there, and I must say I think the naval administrators who instituted that College deserve the thanks of the whole Navy and of the whole of England. It was the first great step in the organization of a sound naval education. I totally disagree with the idea of curtailing the instruction in mathematics, for I think, with Captain Cleveland, that every Officer, if he is going to study science, must study mathematics. Mathematical knowledge is the ground of all science. On the other hand, although it is very necessary that we should, as far as possible, insist on mathematics being taken up by the younger Officers, it would be perhaps to the advantage of the Service if, under certain circumstances (particularly for the senior Officers, such as the half-pay Officers at the College), increased facilities for studying languages were arranged. Two hours a week is certainly not enough for a language, and if these Officers could devote more time to this study, a greater number of hours during which they could receive instruction would be very desirable. In the same way with regard to drawing, and perhaps other matters. Mr. Laughton is rather inclined to allow it to be optional whether the general run of Officers should take up mathematics; but, for my part, I am very strongly against any relaxation on this point. Speaking generally, all naval Officers dislike "x"; there is no question about it; we look with dread at "x," especially the Officers of some seniority in the Service. But I think that is a thing which will very soon right itself. It is only since the establishment of the Naval College that we have had a fair opportunity of educating our Officers; and as the men receiving this mathematical education rise in the Service their minds will be trained to it, and they will not dread this "x"; but, having full opportunity of advancing in knowledge, will find that they can really apply it to some practical use. There is another reason why I think it exceedingly necessary that we should improve the mathematical education, and it is this: that we have now to compete with a coming race of engineers, and if we are to hold our position of command over the engineers, we must go side by side with them in our mathematical education. All this goes to show that our coming Officers should work hard at mathematics. Now, as regards the work, my experience of the College is this—that we have with the younger Officers an abundance of zeal, *especially* amongst Torpedo and Gunnery Officers. There is no end to their zeal; they are willing to work, and I have never found them complain of wanting time to themselves. They may think perhaps there is rather too much high pressure put upon their studies, but they do not object. There is only one subject at the College which I think is made a little too much of, and that is chemistry. I fancy it is a great tax on some of the Officers, especially the Gunnery Officers, having to make a good average out of 400 full marks in chemistry. I do not mean to say that the subject is not useful; it is very useful, especially to Torpedo Officers, and it is exceedingly interesting; but still it is a great strain on Gunnery Officers, who have other more important things to learn, that they should have to get so many marks in that one subject. As regards the instruction itself in mathematics, no doubt there is a certain amount of the theory which might possibly be judiciously eliminated, but I do not think there is any one in the Service who is strictly in a position to improve on the mathematical course. When the Officers who are now studying as Lieutenants, and again coming as Commanders and Captains, rise into authority, and combine practical experience with great

mathematical attributes, they will be able to rectify the few things which may require rectifying in this respect. I am sorry that more has not been said about the College by other speakers. As regards the "Britannia," I have all along been of opinion that we enter our boys too young. Another eighteen months added to the age of entry would in every way be of great value, and I would take that eighteen months out of the "Britannia's" time. The "Britannia," I cannot but think, is a failure; a two years' course in the "Britannia" is not what is wanted; there is no reason for it, boys would be much better at school. I think it is a mistake that four terms of boys, all so nearly the same age, should be together, and that they should be in uniform when they are little more than children. Enter them eighteen months later, and then give them a year of training, principally at sea, in some such manner as Mr. Laughton proposes. The boys would by their examination have proved themselves to be mathematical; their examination should test them in this respect, and then they should be sent to sea, where they would learn navigation and practical seamanship. A year at the age of about 15 is quite sufficient, I am certain. When the "Illustrious" was first instituted, the age at which the greater number of boys were entered was between 13½ and 15, and I know that the Admiralty will tell you that the Officers who entered under this system—some, I am sorry to say, still on the Lieutenants' list—are all so good that they do not know how to make a selection from them.¹

Admiral ROBERT STOPFORD: I wish to say a word in respect to one expression made use of by Mr. Laughton—the term "seamanship" as applied only to handling ships under sail. I think now-a-days it requires more "seamanship" to handle a ship under steam than it does under sail. The requirements of the Service have been so altered lately that unless the man knows how to handle his ship under steam he is no seaman. "Seamanship" is the art of handling your ship. Lord Nelson said the man could not do wrong who put his ship alongside the enemy in a general action. Now I suspect that in a general action under steam that is just the thing he should not do, for he would be rammed to a certainty.² I consider the term "seamanship" applies not only to handling a ship under sail, but also to handling her under steam.

Commander DAWSON, R.N.: It was thought that we had made a very great step in advance in naval education when the Naval College was changed from Portsmouth to Greenwich. Portsmouth was tried for the Naval College for half a century and did little for naval education; a great step in advance has been made in naval education since Greenwich has been made its centre: but we shall make a great mistake, both for the public Service and for ourselves individually, if we think that the education of the Navy can stand still. The country must look for still further advance. The education of the Navy has been far too much divorced from professional service. The moment a man has taken a piece of paper from the examiners at Greenwich, he may close his books and never look at them again. Now we must open our eyes to this fact—the idea in the public mind, as well as in the naval mind, is that naval Officers are not intellectually qualified to occupy appointments on shore which men of the Army are found perfectly capable of filling. There are very few civil appointments under the Crown which any Commander or any Captain on half-pay is now deemed qualified to take up. It would be a great advantage to the public Service afloat, and also to the Admiralty, if young Commanders and young Captains, coming straight from the fleet on their promotion, were so fully qualified by scientific attainments that they could be put into positions in the Controller's department, the engineering department, the ordnance department, the dockyards or arsenals, which they might qualify themselves to fill, in the same way as young

¹ Though I cannot deny that a few of Mr. Laughton's remarks appeared to me to be very unnecessary, and at the same time liable to give offence, still I fully intended to add some expression of thanks, which most certainly are due to him, for the trouble he has taken in preparing what cannot be considered otherwise than a valuable paper, and for bringing under discussion a subject of such paramount importance to the profession.—G. U. N.

² He must keep moving, or he is helpless.

Majors and young Colonels are put into the Horse Guards, the War Office, and the arsenals. The answer, however, which is made is this—that no naval Officers have the attainments necessary to qualify them for such civil employments. Why not? If none of them are so highly qualified, they ought to be. The whole testimony of the Naval Service is this: that an Officer who has served for a few years in a civil appointment as Commander or Captain is, when he goes afloat again, far better qualified to command a ship or a fleet than he was before he had gained such civil experience. You will find the whole testimony of the Naval Service is that those Officers who have had a few years in a civil office are superior to their brethren, simply from the fact that they have been brought into contact and have a knowledge of affairs which they otherwise would not have possessed. I ask then, Why is the Naval Service deprived of this means of higher education? Why are naval Officers shut out from all civil employment under the Colonial, or the Foreign Office, or the Admiralty? It is not simply because naval Officers are regarded as too ignorant to be qualified for such employment. The fact of our being so shut out is undeniable. I venture to say that if we are to occupy in the future the position which we shall be required to take as commanding scientifically educated men charged with the complex machinery and intricate weapons used on board ships, we must have, in order to command those highly educated Officers and men, some more manifest superiority over them than is to be found merely in the stripes on our coat-sleeves. We must be their superiors mentally and morally, so that both we and those we command may feel that we have intellectually, physically, and morally a superior capability for the position of command. I want to see, therefore, our system of education linked on with our professional advancement and employment, so that those naval men who have high scientific attainments may find that there are civil positions under the Crown which such specially qualified men can occupy during enforced periods of half-pay. It is not a question of naval Officers being taken from ships afloat and put to duties on shore; but there are certain periods which must come to every Officer when he cannot be employed at sea. During those compulsory periods of half-pay on shore the cultured naval Officer would be doing far better service to himself and to the Crown if he was gaining experience of affairs by filling some such post as demands high intellectual attainments and would exercise his sense of responsibility, and really educate him for the high position he will have to occupy in commanding Her Majesty's ships or fleets. The idea is partly sketched out in Mr. Laughton's paper when he refers to the Staff Officers at Woolwich; there you have an illustration of what I am aiming at, namely, that if Officers attain to certain qualifications in science during their career as Lieutenants, they shall find, when they attain the rank of Commander or Captain, during the first years when they are necessarily on half-pay, certain positions open to them for the exercise of their high scientific attainments. With such a prospect you would have no difficulty in stimulating naval Officers to study. They would then find instructors for themselves, and would gladly give leisure time and attention to these high mathematical subjects. So long, however, as naval Officers find that giving time to scientific studies does not help on their professional career, you will be obliged to use hothouse methods, in order to force higher education upon the Navy. My belief, therefore, is that a higher education of our Officers will be best advanced, not by forcing processes from below, but by attraction from above.

Captain the Right Hon. the EARL OF DALHOUSIE, K.T., R.N.: I think there have been just two attacks made upon Mr. Laughton's lecture, one by my friend Sir Edmund Commerell. Sir Edmund said that young Officers trained as Mr. Laughton suggests would, when they joined a man-of-war, not know how to behave towards the men or how to command the men. Well, surely the Captains, and Commanders, and Lieutenants of ships would be greatly to blame if those young Officers did not very soon learn how to behave towards the men. Moreover, if this objection is to be good for anything, it ought to be shown that cadets, when they leave the "Britannia" now are fit to command men joining sea-going ships. Now I was Commander of the "Britannia" for some time, and I must say it was no part of the course of training there to teach cadets how to behave towards the men. Sir Edmund says that Officers in the American Service complain that their naval cadets are priggish and difficult to manage. Now I have a better opinion of our Admirals, and Captains,

and Commanders than to suppose that, even if a number of boys did join a sea-going ship with their heads full of their own cleverness and importance, a corrective would not be very shortly applied. If a boy came to Sir Edmund Commerell's ship, and was inclined to give himself airs, I am quite sure that Sir Edmund would produce a very remarkable change in him in about six months' time. Then, again, my friend Lieutenant Campbell says that on board a certain large ironclad with which he is intimately acquainted, the young Officers are most carefully instructed in seamanship. That may be so on board of the "Agincourt," but how about the Midshipmen who have not the luck to be on board of the "Agincourt"? One of the great objections to the present system of training young Officers is this, that it is such a matter of chance. The boy's whole after-life depends on what his first instructors may be like,—the Captain, Commander, the First Lieutenant, the Officer of his watch, and his Naval Instructor. Surely it is most desirable that all young Officers should have a fair and equal chance of getting a good education, but that is absolutely impossible under the present system. We know perfectly well cases where the Captain looks upon the Naval Instructor without much favour, and gives him little support or encouragement, and cases again where the Naval Instructor is neither very zealous nor, perhaps, very capable; or where the Commander or First Lieutenant, or both, look upon the Naval Instructor as their natural enemy. I think, therefore, that the unfortunate Midshipmen who are not on board the "Agincourt" have very various chances of learning their profession. Then we had one assertion made which we have often heard before, and that has been often refuted, and that is that the conditions of naval life are so peculiar that it is absolutely necessary that young Officers should begin almost in their cradles. We cannot say, because we do not know exactly, what in these days would be the result of entering young Officers later; but the finest Officer the Navy ever saw, not even excepting Lord Nelson, Lord Collingwood, and the heroes of those days—I mean Lord Dundonald—entered the Service at the age of 18, and anyone who has studied Lord Dundonald's biography must, I am sure, agree that his type of character and knowledge is precisely the kind which the Navy stands most in need of at the present time. Moreover, as Captain Noel has pointed out, certain batches of cadets who entered the training ship at a more advanced age, either in the days of the old "Illustrious" or the early days of the "Britannia," have done extremely well. But I am speaking from memory when I say that I believe an unusually large proportion of them, compared with some more recent entries, have remained in the Service and fought their way to the front. It always makes me feel indignant to hear that boys must commence their professional career almost in their babyhood, before their intellects can have in any way developed, in order to make naval Officers. I was in the "Britannia" for 2½ years. I went there very much against my will, but I had to go, and when I left the "Britannia," the Admiralty paid me the great compliment of sending me, through the Commander-in-Chief, a formal letter of thanks which shows that, in their opinion at all events, I did my duty by the cadets. My reason for alluding to that is that the circumstances under which I was appointed to the "Britannia" were such as made it my business not merely to perform the ordinary duties of Commander, but to inform myself about the course of training, and to watch very narrowly the development of the boys. I had special responsibilities connected with the two Princes, the sons of the Prince of Wales, who were then on board of the ship. I formed such opinions as I could on the spot during a period of 2½ years, and having since then had my attention called to this question of naval education, I feel bound to say that I am very strongly in favour of some such general scheme as that which Mr. Laughton has laid down in his lecture. I do not believe in the necessity for this very early entry that we have at present. I do believe it to be very injurious to the boys themselves in many ways. I think the ordinary life of a midshipman in a sea-going ship to be so ill-organized as to be little better than very laborious waste of time, so far as his own professional training and education are concerned. I earnestly trust that before long our system of naval education may be taken up by the Admiralty and thoroughly reorganized.

MR. PROUNDES: I fear that what I have to say may not, in the first instance, be very favourably received by naval men, but I think I can show that I have some right to be heard on this matter. Some years ago a certain foreign Government set

on foot inquires in all countries—America, Europe, &c.—on the subject of naval education; and it became part of my duty, in connection with other matters, to make myself acquainted with the subject, and with many of the numerous projects that were put before them by a large number of persons, some of them Officers of our own, the American, and other Navies, who were anxious to gain the goodwill of the people, a good position, and a high salary. The "Nautical Magazine" published some articles written by me two years ago, in which I touched upon this matter, and I would ask to be permitted to quote a few lines:—"Had some combination been achieved between the Naval and Mercantile Marine ten or a dozen years ago, vast sums would have been saved to the country, and both Services would have been materially benefited." I left the Service, partly to enter the Merchant Service, in order to learn my profession; I, therefore, speak somewhat feelingly on this matter. As a member of the Shipmasters' Association, and as one who has had some considerable experience abroad, dealing not only with seamen, but also principally with masters, I must say that I believe a combination between the Merchant Service and the Navy would be of immense benefit to both. The Navy is no longer restricted to the scions of aristocratic and wealthy families; the Merchant Service is no longer entirely manned by the lower classes; there are to be found in it men of the same social position and attainments as those who enter the Navy. If, therefore, the two Services were brought closer together we should have a far wider area of selection, and from it we might be able to obtain young men who would possess a high standard of ability. The paper we have before us points strongly towards the necessity of our having a wide range from which to choose, and in which we may be able to find a large percentage of young men of superior ability (so necessary now that our Officers cost so much to train). I feel most deeply, that as things are at present constituted in the Navy, young men do not get sufficient opportunities for learning how to handle a ship, or to take charge of a vessel under weigh. If some arrangement could be come to with our leading shipowners, so that these young men might go to sea and learn something practical, both in large sailing-ships and also in steamers, it would be of eminent service to the Navy. We put too many eggs into one basket, in and by costly ships; and it would be quite unreasonable to suppose that any young Officer could be, for a moment, entrusted with one of the valuable ships of the present day. Our training-ships are too few, and our surveying ships are also far too few; the surveying ships might be made very useful, both for surveying purposes (when we consider the vast extent of the unsurveyed world and our commerce) and also as training ships; I cannot urge too strongly this point. If I have not had the special experience of many of the distinguished naval Officers present, I have had a far wider experience in travelling through the world than any I could have acquired on board of a man-of-war. I have been on board many men-of-war flying the flags of other nations, vessels of various classes, in harbour and under weigh, and merchant ships of all sizes and descriptions, and I have made passages in the steamers of the principal lines all over the world. As a question of economy I think that such a combination as I have referred to would be to the credit of the country, and to the improvement of our Services most materially. At present it is almost impossible for a young naval Officer to gain the experience that he needs. Merchant vessels are, of course, somewhat different from men-of-war; but naval Officers must excuse my saying that, in my experience, a good merchant seaman is a far more useful man than the ordinary Navy man of the present day, outside his mere routine work; I think if our men were trained in merchant ships, as well as in the Service, we should make them far better seamen, and in the end our ships would be better manned. We would also find that young Officers would learn how to command men; they would get that self-reliance and experience that they can never get under a number of senior Officers, and on board of vessels where they never have an opportunity of learning practical work, handling spars and weights, or of making or shortening sail. As a member of the Geographical, the Statistical, and other Societies, I am much pleased to hear such a distinguished gentleman as the lecturer point out the absolute necessity for the study of history and several other matters, especially of languages and of naval history. I have, I regret to say, often found our naval Officers on foreign stations ignorant of the people and country with which their duties brought them in contact.

The CHAIRMAN: Mr. Laughton has read us a most interesting and instructive paper. It divides itself into two parts. In the first part he gives us the benefit of his experience at the Royal Naval College; and in the second part, having deduced from his experience that a certain previous groundwork of mathematics in the Officer studying there is absolutely wanted to carry out the intention for which the College is founded, he offers some suggestions by which that object can best be obtained. I think that what he has said as to the necessity of a small amount of rudimentary mathematics being previously acquired by those Officers who come to avail themselves of the course at the College agrees very much with the general opinion of this meeting. The second part is, of course, a very much larger subject, connected as it is with the entering and training of young Officers; but I think even there, there is a consensus of opinion that somehow or other the five years—from the "Britannia" to the College—which embraces the best educational period of life, but which is cut out from the systematic education of young naval Officers, should be shortened if possible. Mr. Laughton proposes to do it by abolishing the "Britannia," and by keeping the boys at school until a later period. Many Officers have proposed to keep them longer in the "Britannia" before going to sea. I think the majority of Officers are inclined to have a certain course in a training-ship for the purpose of teaching seamanship more carefully. I confess I myself think that if this can be done, it is a very desirable object. It is said that our training-ships have not produced the results expected. I think they certainly would produce the very best results in teaching young Officers how to handle ships under sail, and to navigate them, if those training-ships were reconstituted with sufficiently accurate and carefully digested regulations in detail, directing how the instruction was to be conveyed to the Officer. Those who are old amongst us will recollect how we had to pick this knowledge up in sailing-ships, and the very great advantage it was to get with an Officer of the watch who would take pains to explain to his youngsters such things as the action of the rudder upon the ship; of the sails upon the ship; of the wind upon the sails; and to instruct them generally on the current events of the watch. If such teaching were systematically carried out in a training-ship, it is impossible to suppose that there would not be more seamanship and navigation learned in such a ship in a year than can possibly be picked up on the present system in six years. There are one or two points I should like to mention. There is first the idea that has been alluded to that some of our best young Officers cannot do even elementary mathematics—in fact, that although they are very fine seamen, yet their souls are above such questions as "x and y." When I became President of the Naval College it happened that a good many acting Sub-Lieutenants had recently been rejected—a very sad thing to see—and there was a strong feeling, which found frequent expression, that very good-going sailors were being sent out of the Service because they could not do these little bits of algebra. I, therefore, took some trouble to ascertain, from the first institution of the College, how far the Officers rejected were, or were not, possessed of good certificates as seamen. I had all their certificates for seamanship and gunnery tabulated, from the institution of the College till the time I left—a period of five years; and, similarly, the certificates of those who had got first classes; and I can assure you that when you looked at the table of Officers rejected at the College you saw a mass of "3's" in seamanship and gunnery; but if you looked carefully you would find here and there a "1" for seamanship, and here and there a "2" for seamanship or gunnery. . . . If, on the other hand, you looked at the list of those who had got first classes at the college you saw a mass of "1's." I do not believe that amongst more than thirty there was one "3" from the top to the bottom of all those Officers who got first in the College, either in seamanship or gunnery. That, I think, very satisfactorily disposes of the idea I have referred to. Indeed, when you eliminate all those boys who are in bad health or of puny constitution, as is done in our entry examinations by a medical examination, and take those only who are ordinarily robust, you will find that, within certain limits, vigour of mind and body go together. That is the ordinary rule of nature, and holds good in the Naval Service as well as elsewhere. There is another point I should like to mention, with reference to the Academy at Annapolis. I have been at Annapolis, and also at Washington, and I had there some conversation with Admiral Porter, who was then and is now, I believe, head of

the American Navy. He had also been President of Annapolis. Admiral Porter told me that after the war broke out, he was sent for to Washington, and ordered to go down to the Tennessee and the Mississippi Rivers, and form a naval flotilla. He was not provided with either boats, men, or guns; but he was to go down and do the best he could. He said the first thing he did was to get together a number of his Annapolis students. Many of these had never been at sea, except in their cruises in their training-ships attached to the Academy, and the oldest of them who had been to sea was not more than 25 years of age. He took these young men with him: they had neither boats nor guns: they had to get boats from the river, fit them with mechanical appliances to enable them to carry guns, and for the purposes of the war; they had to pick up men in the best way they could; and to beg, borrow, or steal guns from the Army. They very soon got their flotilla into good order. The discipline may have been rough, but it was so good that, he said, he went unexpectedly at all hours of the day and night to visit his different vessels after he had organized his squadron, and never found them wanting in respect to discipline or steady attention to duty. This account is confirmed by all the accounts I have seen of that part of the war; notably in the description of General Sherman's doings there, and of his celebrated march through the country. I thought it well to mention this as showing that young men who had been trained at Annapolis were found, in point of discipline and ready resource, to be, in a case of great emergency, not behind what perhaps our Officers might be at the same age and under the same circumstances.

Mr. LAUGHTON: I think that Sir Edmund Commerell must have misunderstood what I said as to the examinations of very little boys. On a former occasion, in this theatre, I spoke at some length upon those objections to which he has now referred, and expressed my opinion that competitive examinations of boys of 12½ or 13 give very little idea indeed of what any particular boy may become when he grows up to be a man. Lieutenant Campbell dwelt at some length on the thorough teaching of seamanship on board a certain ironclad, but I gathered that it was entirely theoretical seamanship. But, in fact, in my paper, I spoke of young gentlemen as learning seamanship from their books and from the boatswain. As far as the practical value of it goes it does not seem a matter of much importance whether they learn it from the boatswain or from the First Lieutenant. What I wished to suggest was rather a doubt as to whether, if they were in command of a watch, they could really do what they had to do, at any rate, without getting painfully nervous? Admiral Boys, I think, really agreed with the point I meant to urge, namely, that if there were a sufficient number of Officers more highly educated, they would be able to take certain appointments in connection with the Gun Factory, from which, at present, they are excluded; and I think Captain Dawson took very much the same view. Captain Cleveland said, that in the Gun Factory you do not want soldiers or sailors, that the work is really engineering. This is no doubt true as to the actual construction, but I cannot help thinking that, in many respects, it would be better for naval guns to be mainly under the direction of naval Officers, and for naval Officers to design or to propose amendments in those guns. He said that what we want is to have the best men. I quite agree with him. But at present the best men seem to be all soldiers. I think it would be a great step for the Navy if we could have some sailors among them. Captain Noel thought that, in speaking of the standard of seamanship, I was going beyond my province, and beyond the scope of my lecture. I am sorry he should think this, but I do not agree with him. The subject of my lecture was "Naval Education," which I do not think limited to mere book learning. But even if I admitted the limitation, I had to suggest a certain change as likely to produce an improvement on theoretical education; and knowing that the main argument against the change I suggested is that, under the present system, our young Officers learn seamanship, and that under the system I was suggesting they would not learn it, I held it to be a logical support of my argument to bring forward instances which showed that under the present system they do not always learn seamanship very thoroughly. Lieutenant Campbell took exception to a curiosity of examination to which I referred, and which, he said, carried him back to the days of Captain Marryatt. It actually happened within my own time and within my own personal knowledge. But when

I spoke of certain shortcomings of young naval Officers in seamanship I was speaking from information on which I can very well depend, and which I have received from executive Officers of high mark in the Service. Captain Curtis referred to the siege of Sebastopol and to something that happened at Balaclava. That was thirty years ago, when the practical training of young naval Officers was very different from what it is now. I am positively assured by Officers of high rank in our own Service that of late years, within their own experience, they have found some naval Sub-Lieutenants not so smart in work such as I spoke of as young artillery Officers who had been carefully taught it. It was that particular point which I wished to raise. As to their being artillery Officers or being naval Officers, they are both Englishmen, and we wish them both to know their duty thoroughly; but if there is to be a difference, we would, as naval men, wish it to be in our favour. There was one historical remark made which I would wish to correct. It was stated that Lord Nelson said that a man could not do wrong if he put his ship alongside one of the enemy. Now this is very different indeed from what Lord Nelson did say; which was that if signals could not be made out, and an Officer could not understand what he had to do, he "wouldn't be doing very wrong" if he put his ship alongside one of the enemy. This is quite a different thing. The putting his ship alongside one of the enemy is the very least he can do. What he ought to do is to act intelligently on the plan of battle ordered by the Admiral. A gentleman spoke of the advantages that might be gained to the Service by a certain closer alliance with the Merchant Service. I quite agree on that point with everything he said; but I did not refer to it in my paper, because, in the first place, I spoke on it at some length a year or two back in this theatre; in the second, because I did not think it quite came within the subject of my lecture. Surveying ships have, no doubt, often been a very good school for young Officers; and it does seem a great pity that the surveying service has been allowed to fall to its present low ebb.

The CHAIRMAN: I am sure you will allow me to express your thanks to Mr. Laughton for the very excellent and instructive lecture he has given us, leading, as it has done, to a very useful discussion.

Friday, March 24, 1882.

GENERAL SIR DANIEL LYSONS, K.C.B., &c., &c., in the Chair.

MILITARY EDUCATION AND TRAINING.

By Captain WALTER H. JAMES, late R.E.

It is not so many years ago that the necessity for military education was first acknowledged in England. Before the year 1870 it seems to have been, with few exceptions, an article of English faith that the trade of soldiering was one which required no apprenticeship, *i.e.*, no previous training; that the soldier was born, and was not to be made, and that when he donned a red coat he at once became, as it were, impregnated with those qualities and that knowledge which in other professions had to be learned by hard work and study. This doctrine, however, somewhat shaken by the Crimean War, received a rude disproof in the struggle of 1870-71. In this the French were the inspirationists, their opponents the educationalists, and it is hardly necessary for me to recall to you which side won the day. That we in England should ever have espoused the former doctrine is the more curious, inasmuch as our own records show numerous instances where incapacity has led the bravest troops to defeat, while trained military ability has led the same troops to victory. The American War of 1814 proves this very plainly. Englishmen are too apt to think that we have always been victorious, whereas a more intimate and accurate acquaintance with our military annals will show that this is far from being the case.

From 1709 to 1809, *i.e.*, for 100 years, with the exception of India and a few brilliant but small affairs in America, British arms on land were seldom successful. The list given in Appendix A shows how and when we were defeated, and in nine cases out of ten we may fairly say that our defeats were due to the incompetence of our commanders. Now, if one thing is more certain than another it is that all the greatest Generals of anything like modern times—Turenne, Marlborough, Frederick the Great, Marshal Saxe, Napoleon, Wellington, and Count Moltke—belong to the class of educated soldiers, and it would therefore seem somewhat like slaying a dead man to add one word more in favour of a system which is universally admitted in Europe. But here and there in England we still find a stray advocate of the old and exploded theory as to the untaught and untrained soldier being the best. The gentleman who takes this view generally

dubs himself a practical man, and certainly if total want of knowledge of any theory confers a right to this title he is fully justified in its assumption.

But I venture to think that there is no special peculiarity in Englishmen that absolves them from the common lot of other nations, and that we, like other folk, must learn our military trade if we do not wish to see defeat instead of victory attending our colours. It would be an invidious though very easy task to point out how, even within the last few years, we have seen defeat following on ignorance of the first principles of the art of war, and to show, on the other hand, how victory has been gained by those who were trained in the leading of troops and the proper direction of our military resources.

There are, roughly speaking, two military systems—that first adopted by the Prussians and followed now by the whole of Europe, the other to which we in England have hitherto most inclined. The one I may describe as the organization of mediocrity, which is the quality of mind most usually met with, the other as the blind belief that Providence will always provide us with a genius. Putting aside the latter as unreliable, let us then inquire how the former may best be followed.

The Army is composed of Officers, non-commissioned officers, and men, and I propose to deal with each class separately.

With regard to the education of Officers, we have to deal with two different questions, viz., education before entry into the Army, and that which is to follow when once the gentleman becomes an Officer.

With regard to the pre-military portion, I do not think there can be much doubt that the stamp of man required is one who may be roughly described as the public school-boy, and I may add that although perhaps but a small proportion of the highest forms in public schools choose the Army as a profession, this is chiefly due to the fact that eminence in such a school points more generally to a University career. Still, I can speak from my own knowledge, that a very large proportion of young men who compete for the Army come from our great public schools. With regard to the present mode of entrance, some may wish that competition would be done away with or modified, but so long as the present large numbers desire to follow a military career it would be quite impossible to alter it. It is also idle to put forward, as some do, that competitive examinations exclude those who are physically the most fit for the Service. Every impartial observer must admit that our Officers are, certainly as far as physique is concerned, quite up to the desired standard. H.R.H. the Duke of Cambridge, who has had opportunities far in excess of others of judging on this head, has himself repeatedly expressed this opinion, and I shall therefore consider it settled. And now as to the actual detail of our system.

There are three ways of becoming an Officer, viz., through the Royal Military Academy, Woolwich, for the Artillery and Engineers, through Sandhurst and the Militia for the Cavalry and Infantry. In all three cases alike there are two examinations to pass, viz., a literary

and a military. To enter the Army through Woolwich or Sandhurst a competitive literary examination must be passed for entrance to these institutions, and a qualifying military examination must be gone through to pass out. Those who choose the Militia as their road to the Service must pass a qualifying literary and a competitive military examination before obtaining a commission.

This seems to me a very fair and judicious arrangement. Many a boy can enter through the Militia, having a taste for military work, which he very likely learns with more ease than literary; at the same time it by no means follows that he is intellectually inferior to the one who gets into Sandhurst. Moreover, through the Militia we get a very valuable class of men, viz., University graduates. Many of these make up their minds to seek a military career too late to enter Sandhurst, or, in some cases, they prefer to avoid a residence at that College, which is, of course, very different to University life. Again, we find others who, being too old for Sandhurst, enter through the Militia, and I shall show later on that those who do so are in nowise inferior to Sandhurst cadets. Of course I speak of the examinations as now existing and not of the old Militia examination, which was a simple farce.

Dealing first of all with admission to the Military Colleges, I may remark that the entrance examination is divided into two parts, viz., a preliminary and a further examination, the former being a qualifying, the latter the competitive examination, on which the candidate's chance of success depends. With the exception of one or two questions of detail, there appears to me but little which it would be well to change in any of these. The chief points requiring notice seem to be, for Woolwich, the preponderance given to classics, and the small number of marks given to English, while, for both Sandhurst and Woolwich, the relative small value attached to modern languages is worthy of remark. For Woolwich, a candidate can take classics as one subject, and 4,000 marks are given for it, viz., 2,000 for Latin and 2,000 for Greek. For Sandhurst, however, Greek and Latin are separate subjects. Again, for Sandhurst, English is credited with 3,000 marks, while for Woolwich it is worth only 1,500, as although 2,000 are given for it, 500 are given for the essay, which all must do.

I do not think that the English subjects are always chosen judiciously. The object in selecting them should be to lead the candidates on to further reading, and not merely to exact more or less accurate knowledge from the competitors. For instance, last Christmas the second and third books of Napier's Peninsular War were set. Book III consists of dry details of the doings of the Spanish Junta which have no interest, and the learning of which teaches no useful end.

The plan of some examiners of asking such questions as these I read from the examination papers set to candidates in 1880 is much to be deprecated, viz.—

“Explain the following passages in relation to the context in which they severally occur:—

“(1.) When Sylla after all his victories.

“(2.) A commanding height from whence a beneficial stream.”

What can such questions demand but parrot-like learning instead of true appreciation of the subject? Again, why should the meaner works of our great authors be selected, for instance, "Samson Agonistes" to represent Milton? I quite admit that variety is necessary, but surely the field of English authors is wide enough to choose from without it being necessary to choose such minor productions. Moreover, if certain parts of works are laid down for the course, it is not fair to ask questions which demand a knowledge of other parts. Yet this has been done. For example: In October last the examiner in Bacon did not seem to be clear as to what the "Essays" were, as he asked a quotation from another part of Bacon's works, "The Praise of Knowledge," which is not found in any ordinary edition of the "Essays," even by way of appendix, and he asked young men to add the *Antitheta*, which are not included in the "Essays" proper—though appended to them in some editions, *e.g.*, Archbishop Whately's—he might as well have asked a question out of the "Novum Organum," or the "Colours of Good and Evil." Again, the first question on Chaucer at the October examination for Militia was really not in course. Among other things asked in an examination on the "Prologue" was the route taken by the pilgrims to Canterbury, a question which would perhaps suit an examination on the whole of the *Tales*; but which is not to be answered even out of the elaborate preface of the Clarendon Press, and which, however fit for Chaucer Societies, is out of place at ordinary examinations.

Foreign languages in both Woolwich and Sandhurst examinations hold a very poor place, as a comparison of the tables of marks given for entrance to our two military seminaries will show. Moreover, I fail to see why, for Woolwich, a candidate should be permitted to take up Italian, Spanish, Russian, or Hindustani, but only French and German for Sandhurst.

I would also suggest the propriety of separating geology and physical geography. The two together are too much to be properly got up by young men, as the lowness of the marks obtained for the subject, as it now stands, shows.

A great source of complaint among instructors at Woolwich and Sandhurst is the want of knowledge of geometrical drawing and descriptive geometry, which much increase the difficulty of teaching fortification, and at the latter the hindering want of knowledge of mathematics. So far as the first two subjects are concerned, it would be a simple matter to give more marks for geometrical drawing, combining with it elementary descriptive geometry, reducing the marks at the same time given for freehand drawing, in which the results in my own experience and in that of many other military tutors partake too much of the nature of a lottery.

With regard to mathematics, I am fully aware that it is idle to endeavour to impose this as a subject on all candidates. But those of the meanest mathematical ability could easily learn algebra as far as simple equations, and they would then be in a far better position to deal with those problems which constantly arise in fortification and other military subjects. I would suggest, therefore, that to the extent

I propose, algebra should be made obligatory for the preliminary examination for Sandhurst.

The alterations which it would seem desirable to introduce, therefore, I have embodied in Tables B and C. It will be seen that I have made no sweeping changes, indeed, they are limited chiefly to a slight rearrangement of the marks for languages. I am led to do this because I am sure that for an Officer there is no knowledge so valuable.

Having thus got our candidates through the literary portion of their examination, let us follow them through the more distinctly military portion of their education. I do not propose to enter into a detailed discussion as to the courses of instruction at Woolwich and Sandhurst, because time would not allow me to do so, nor do I think that change is called for in either case unless it be in details which I shall deal with later on.

With regard to the system by which Militia Officers enter the Army, I should like to clear away an error which is widely spread, viz., that it is the back door by which candidates enter. I would first of all point out that they pass an examination similar to that passed by Sandhurst cadets on leaving the Royal Military College, except in this one particular, that the papers set to the cadets are avowedly easier. Comparing the results of the last two Militia examinations with those of the two Sandhurst final examinations, I find that the percentage of Militia Officers who obtained 75 per cent. of the full marks was in the first of the two examinations 31 per cent., in the second 35 per cent. From Sandhurst the percentages were 24.4 and 33. In both cases the result is in favour of the Militia Officers. It must also be remembered that the latter have served on an average six months with troops, and that many of them have obtained a certificate from one of the schools for the Auxiliary Forces, so that they join the Service with a far better knowledge of drill and interior economy than the Sandhurst cadets after their eight months' course at their College, and are nowise inferior to them in military knowledge. It may, perhaps, be urged that the literary test demanded of Militia Officers is too feeble; it would, however, be perfectly easy to raise this, so that this objection is within the power of the Civil Service Commissioners to remove. I would myself suggest that, keeping to the subjects shown for entrance to Sandhurst, a minimum of 2,000 marks should be exacted.

The competition both through the Militia and Sandhurst is very great, but it is greater through the former than the latter, being at the last examinations nine and eight to one respectively. For Woolwich the competition is nothing like so severe, it varies between about two and three to one.

I should like to say one word more about the examinations which are conducted by the Civil Service Commissioners. No one appreciates more highly than myself the excellent work done by those gentlemen; but I would venture to suggest that it would be better if the Cambridge examination practice were followed in two particulars: the

one being to publish the names of the examiners, the other to have at least two to look over every paper. Adopting these suggestions, we should have the certainty that in all cases the examiners would be men of note, and further that the marks given would be more accurately adjudged than is possible by one examiner only. I think, moreover, that although it is undesirable to alter the system by which a particular period of history is studied in detail by the candidates, it is a moot point whether some general knowledge of the history of our race, and of the process by which this country has been built up, might not be demanded at the preliminary examination.

With regard to the courses of instruction at the two Colleges, it would appear to me that the plan of using text-books, which are compiled by professors who have an interest in their sale, is a bad one. In the first place, it seems placing the author in a peculiar position with regard to his pupils; and, secondly, it has undoubtedly a tendency to keep books in use when they have become considerably behind the age. At present—to take one instance—we have three authorities on fortification, viz., the “Field Engineering,” the “Woolwich Text-book of Fortification,” and Phillips’ “Elementary Course of Field and Permanent Fortification.” Although the first two agree pretty well, it will be found on comparison that the last, which is used at Sandhurst, differs considerably from them; and, of course, on this subject the official “Instruction in Field Engineering” must be considered the authority.

We have thus passed our candidate through the neophyte stage of cadetship or Militia Officer, and may now suppose him to be an Officer. Before, however, dealing with the course of instruction and training in the Service, I propose briefly to describe the systems for admission used in Germany, France, and Austria. In considering them, however, let us bear one point well in mind. In all of these countries it is difficult to obtain the numbers required, whereas in England considerably more wish to enter the Army than room can be found for, and that therefore the methods of others are not necessarily applicable to us.

In Germany, a young man can become an Officer either through the cadet schools or by being nominated to a regiment as an *avantageur*, i.e., in a position somewhat analogous to that formerly held by a gentleman-volunteer in England. A literary qualification is required in either case, and this, I may remark, is quite equivalent to the examination passed for entering into Sandhurst. After a short period of probation, the *avantageur* becomes a *porte-épée-fähnrich*, equivalent in rank to our midshipman in the Navy; and finally, after a six months’ military course at one of the schools of instruction (*kriegsschule*), if approved of by the Officers of the regiment, receives a commission. Those who enter from the cadet schools do so either as Officers or as *porte-épée-fähnrich*, having completed both the civil and military requirements at the cadet school.

In France, Officers are obtained from the *École Polytechnique* for the engineers and artillery, and from *St. Cyr* for the infantry and

cavalry. Entrance to these colleges is by competition in civil subjects only. Officers for the latter branches are also obtained from the ranks after a service of two years, or after one year's service and passing the final examination at the École Militaire d'Infanterie, at St. Maixent.

In Austria, the preliminary step is obtaining the rank of cadet in the Army, which may be obtained either from a cadet school, or by passing the same examination as those from these schools have to pass. Cadets obtain the rank of *offizier-stelvertreter*, a rank analogous to the German *porte-épée-fähnrich*, on the recommendation of their Commanding Officers, and become Officers, Sub-Lieutenants, after a year's service, and showing a proper knowledge of their work. They must also, as in Germany, be accepted by the Officers of the regiments as worthy to hold the rank of Officer. Cadets from the cadet schools, who have passed the final examinations, are also commissioned direct as Sub-Lieutenants.

It will thus be seen that the three great military Powers employ a system very similar to our own. All admit two modes of entry, the one direct from military schools, as through our Sandhurst, the other after a literary test, a military test, and a certain amount of military service, as we do with our Militia Officers. We differ from Germany and Austria, but resemble France in having a special school for the artillery and engineers, and a competitive examination for entry to our military colleges.¹ I do not see, therefore, that beyond the few slight changes I have proposed, there is anything that needs alteration.

And now with regard to the career of the Officer in the Army. His fitness in England is tested by the promotion examinations, and by the confidential reports. I do not think that, as the latter are at present managed, we need pay much attention to them. They are not exhaustive in character, and are as a rule filled in after a somewhat sealed-pattern fashion, and it is a very rare thing for an Officer to be recorded in them as unfit for promotion. The opinion of a General Officer on anybody below the rank of Lieutenant-Colonel can be but of little value, as except in rare cases he can know the junior Officers of a battalion by name only. The value of confidential reports therefore rests on the recorded opinion of the commander of the battalion only. With regard to this latter Officer, except at the great military stations such as Aldershot, the Curragh, &c., the General has but little chance of ascertaining what his qualifications are to lead his regiment on active service. For I would submit that it is not by a knowledge of the mere drill manœuvres of a battalion in brigade, nor by a mechanical checking of the regimental records at the inspection, that a man's fitness for his post can be judged. Nor can the fitness of the other Officers for war be ascertained by seeing one put the men through the manual and firing exercises, another the bayonet exercise, while one or two do some battalion drill, and, perhaps, a subaltern arranges a company as an advanced guard after the field

¹ In Austria and Germany, Officers of the Artillery and Engineers go through a course of special instruction after they join the Army.

exercise pattern. Nor does the solemn performance of the sword exercise give any proof that the Officers who do it can lead their men in war. We are, therefore, driven to fall back on the examinations, and these, though showing that the individual tested has more or less acquaintance with the theory of his subject, in nowise show that he has that practical knowledge, without which his theoretical is but very little use. In Germany, an Officer's qualifications are tested by the practical work of instruction that he has to impart to his men, while his theoretical capabilities are gauged by military essays of a practical character, which he has to prepare during the winter, and by the actual carrying out of small tactical exercises. The efficiency of the companies and battalions, and therefore of the company and battalion leaders, are judged by their performance of practical work such as they would have to carry out in war; while the shooting of the men is judged by the result of a battalion exercise carried out as much as possible under the conditions of active service. Moreover, the higher ranks are tested as to their capabilities of handling men by practice at autumn manoeuvres which, as you are all doubtless aware, are carefully graduated so as to train the brigade and the division as well as the army corps. No one who has lived among German soldiers but must be struck with the intensely practical aim of all the instruction, and how careful they are not to judge results by the mere outside appearance of their troops. The consequence of this system, of what I may call continual inspection, is to keep the Officers continually on the alert, knowing, as they do, that any relaxation of effort will be at once noted. I am far from believing that it is a desirable or good thing to transplant a purely foreign plant to English soil. But I would venture to draw your attention to one simple fact, viz., that in all foreign countries, the German plan, or one nearly analogous to it, is adopted, for the Austrian and French systems resemble closely the German, while we alone do not test the attainments of our Officers by ascertaining practically what they can do, except in so far as mere drill is concerned. It seems to me, therefore, that in this particular there is something to learn from foreigners.

I am quite ready to admit that considerable strides have been made of late years, and that much has been done in the way of garrison instruction, but the fault throughout all our system seems to me too much theory, too little practice, and practical work can only be taught with the regiments, which should be the proper schools for Officers and men to learn the chief part of their duties in.

I know of course that I shall be met by some, at any rate, by the old and well-worn reply that, owing to the nature of this country, the kind of teaching that I advocate is impossible. The gentlemen who take this view seem to think that the mere utterance of this statement closes the argument. This I do not for one moment admit, and I unhesitatingly say that in every military station it is quite possible to find ground where companies and even battalions can be taught practically their work. Much of it can be done along the roads, and there are always public parks in the large towns. This work, this

instruction in bivouacking, in attack and in defence, in outposts, manœuvres, &c., must, of course, be taught by the Officers; and while the latter are teaching, their superior Officers would see who could do the work and who could not, and could form a far better judgment of their capabilities than can be obtained from the result of any examination. This question of training is one in which that of the men is so mixed up with that required by the Officer, as to render it impossible to deal with each separately. At present both men and Officers are drilled, but they can scarcely be described as trained. The efficiency of a battalion or cavalry regiment or battery is judged by the mere outside show of drill and appearance, drill manœuvres and marching past, and not in the least by the capacity of Officers and men for actual service. Nothing is more important than that our soldiers should be taught in peace to do what is required of them in war. You will find French and German books without number which treat of this, the most important part of a soldier's education. In English there is not one single one. The drill-books for the three arms contain but little which is useful in this direction. The "Infantry Field Exercises" gives some information on the subject of the attack; it also deals, to a certain extent, with the question of outposts, and prescribes a form for the advanced guard of a battalion, but there is no authoritative system laid down in it for the training of the men.

It may also be desirable to point out how much more complicated our infantry drill is than that used in foreign armies. We have two manual exercises, although only one rifle. Our various methods of forming square against cavalry are quite useless under modern conditions. Again, one-half of the drill is based on the idea that we fight two deep in a shoulder-to-shoulder line. Such movements as oblique échelon, retiring from one flank in rear of another, belong to the days of the Great Frederick, and not to those of the modern breech-loader. It is not by the practice of manœuvres, which are useless on the battle-field, that troops are rendered smart, but by the constant practice of those few and simple movements which are the only ones required in war. On what possible occasion would a brigade be required to change front as a rigid mass? Bodies larger than a battalion need only a rendezvous formation for line-of-battle, and sufficiently defined movements to enable them to go through an inspection and march past. In the days when troops moved as rigid bodies, when drill was used on the battle-field, a more or less complicated drill was necessary. But a comparison of the drill-book of the beginning of this century with that now in use will show that the latter has not been simplified by age.

The "Regulations for the Drill and Manœuvres of Cavalry" contain very little as to the use of the arm when covering an army, and next to nothing on the employment of cavalry against cavalry in large masses such as brigades or divisions. The artillery are more fortunate in their "Manual of Field Artillery Exercises," as the question of the tactical handling of guns is dealt with therein to some extent. But in all three books to which I have alluded, the training bears to the drill the proportion that Falstaff's bread did to his sack. It seems to

me that at any rate in the "Infantry Field Exercises" there is much which might be left out with benefit. We should ruthlessly cut down the number of manœuvres to the lowest possible; this is especially necessary for us considering the large number of half-trained troops our fighting strength is composed of. Moreover, we need a series of manuals which should indicate broadly, but broadly only, the details being left to instructors, how our men are to be trained.

There is another point to which I must allude, viz., the question of musketry instruction. It has, as you are all doubtless aware, been reported on recently by a Committee. It seems to me that the weak points in our present system are:—

1. That the soldier does not fire often enough.
2. That he is not allowed sufficient ammunition.
3. That his practice is not sufficiently carried on under the conditions of war.

With regard to the first, every man ought to fire at least once a month for the eight best months of the year, besides going through the annual course. He should be allowed at least 120 to 150 rounds per annum, and a considerable portion of this should be expended in field-firing, *i.e.*, as far as possible under the conditions of actual warfare.

I should also like to point out that, in our Regulations for Encampments, a great deal is said about camping with tents, very little about bivouacking. Now, it is quite certain that, at any rate in European war, bivouacking will be the rule, tents the exception.

With regard to the non-commissioned officers. It has been said that they are the backbone of the British Army, and assuredly a great deal will always depend on them. Officers are undoubtedly willing to carry out their duties with as much zeal with us as with any foreign Army; but it would be a very doubtful benefit to the Service to impose on them instruction in the mere routine of drill. This will always be, and rightly I think, the province of the non-commissioned officer. But now-a-days something more than the attainments of a mere drill-sergeant are required of him. In these times of loosened formations he will often have to act as a leader on patrol, &c., and at any rate supplement the efforts of his Officer in the control of the men under fire. For this purpose he must be trained, and although much may be done in his regiment by the Officers, it seems to me we might well adopt the German plan of schools for non-commissioned officers, in which they might receive a certain amount of military training. I think, moreover, if one or two schools of this character were formed, that at them a uniform system of instruction in drill might be taught so as to ensure uniformity of teaching throughout the Service.

At such establishments, therefore, non-commissioned officers should be put through a short course of fortification, limited chiefly to the practical part required for putting hedges, walls, &c., in a state of defence. Tactics to a limited degree sufficient to enable them intelligently to aid their Officers, and reconnaissance to about the extent given in Colonel Hale's admirable little book entitled "What to

Observe, and How to Report it." They should also be taught interior economy, and go through a course of drill.

With regard to the higher education of Officers. We, like other nations, have our Staff College, but we do not hold forth the same inducements to go there as is done in Germany and Austria; for example, an Officer who passes successfully through the Staff College in either of these countries obtains a very substantial gain in promotion, but with us it does not follow that even the most distinguished students necessarily obtain employment. I speak from experience when I say that I do not think that every Officer who has gone through the College is fit to serve on the Staff. That, however, is the fault of the Officers who have declared that they were fitted for the Staff. This is a point on which considerable more stringency is required. Moreover, the month which every candidate is attached to the Staff of a General should be made a real test instead of the sham one that it too often is. It seems, indeed, rather difficult to state what your opinion of a candidate is for actual Staff work, if, as is often the case, there has been no opportunity of appraising his capabilities except in mere office routine; but Officers should only be sent for trial to stations where there is some possibility of testing them. I do not think that there is any need to alter the present system of admission. The changes which have lately been made have been a great improvement. But I think that candidates might be allowed to take any three European languages, or languages of India, in which an Officer can pass in the latter country. French, of course, should be obligatory, as it serves as a means of communication between all educated people, almost as much as Latin did in bygone ages. With regard to the course of education at the College, I confess that I should like to see mathematics, the experimental sciences, and geology abolished, or, at any rate, made purely voluntary as in Germany. The qualification in mathematics exacted from Officers on entry is quite sufficient for practical purposes, while the idea that the smattering of astronomy is of the faintest use is, I believe, an erroneous one. The observations of any but a trained observer are quite useless for determining latitude or longitude, and the two or three observations made by each Officer at the College certainly do not place him in this category. Nor do I think that the very slight acquaintance with chemistry, &c., now enforced on Officers is of any practical utility.

One of the most valuable parts of the training at the College is the reconnaissance tour which the senior class goes through every year. While on it, they perform the duties of the staff of an army on active service, positions are selected, camps and bivouacks and the movements of troops by rail arranged for. It would seem desirable that this work should be done more often, and that at least three Staff tours should be done by each Officer during his stay in the College. Further, I should like to see increased facilities given to the study of modern languages. Any two or three Officers who wish to study one should have a master provided for them.

The curriculum of our Staff College differs but little from those of the similar institutions in Germany, Austria, and France. In Germany

perhaps the system is somewhat more elastic, the students being left to a great extent free to choose the particular lines they will pursue. With us the subjects are more fixed, and the attendance at lectures is more rigidly exacted. It is a matter of opinion which is the better plan. One peculiarity of the German plan is that the professors are more often changed, while very often a series of lectures are given to the students by Officers or civilians who have no permanent connection with the College.

While on this question of professors, I may remark that at Woolwich, Sandhurst, and the Staff College the professors and instructors are appointed by the heads of the respective establishments. Now, of course, it is not to be doubted for one moment that these gentlemen always nominate those whom they think most fit for the various posts. But I would observe that they cannot have anything like as wide a knowledge of the attainments of the Officers of the Army at large as the Director-General of Military Education, and it would seem to me better, therefore, that he should have the selection of them. Further, at all these establishments the students obtain their places only after competition; but there is no competition or proof of efficiency required to become a teacher.

It would, therefore, appear desirable that some system should be adopted by which the best men possible should be procured to fill the posts of instructors. It might be notified in General Orders that such and such a position was vacant, and Officers desirous of obtaining it might be directed to send in applications, with proofs of their capacity in the shape of work done.

I have no hesitation, moreover, in adding, that incompetent instructors should be removed without mercy; and, with a view to avoid appearance of harshness, it might be arranged that all appointments as instructors should only be for three years, renewable up to six; at present they are for seven, and without any probationary period.

I may here add that I think the names of military examiners should be placed on the papers they set, for the same reason that I have asked for a similar practice with regard to the civil examinations.

Suggestions have been made from time to time as to the desirability of shortening the course at the Staff College. But in Germany three years are allowed; while Austria and France devote two years, as we do, to it. I am convinced that this is not too long a time. It would be, however, highly desirable that Officers, after going through the course, should not be appointed to the Staff unless they are recommended for it by the Commandant. I believe myself that in every batch of twenty Officers at least three would be found of no particular qualifications for Staff duties.

There is a point with regard to Officers in which I think we might with advantage adopt Indian practice, viz., in giving rewards to Officers who pass in languages. Periodical examinations might be held in London in various modern European languages. They should, of course, be of a searching character, so as to show real knowledge; but Officers who passed them should be rewarded. In the event of a European war, the services of such Officers would be invaluable.

Lastly, I would say a word as to the training of the three arms combined, and the training of the higher ranks in handling them. Some years ago a system of Autumn Manœuvres was brought out with a flourish of trumpets. One year we were to have operations on a similar scale to those held on Salisbury Plain some years ago. The next a force was to descend on some point of the coast, and the third year troops were to be assembled at Aldershot. Further, a tactical station was to be formed in the north. I need hardly remind you that the only part of this programme which has been carried out is the assembly of troops at Aldershot. This year we are to have a gathering at this place, and on a somewhat larger scale. But it is absolutely necessary, both for the training of men and Officers, that such gatherings should be made every year, even if the originally proposed programme, which would be a better one, were not carried out.

Our cavalry must have opportunities of acting together in large bodies, to practise their duties while covering an army, and to be of any use, such manœuvres must embrace a wide tract of country. Why should not two Army Corps act against one another from some distance apart? Such operations would be real, would teach what we should have to do in real war, and would be far more practical than those confined to one station, such as Aldershot or the Curragh.

Why, too, should we not adopt the foreign plan of Staff tours by Generals in their own districts? Nothing could be more valuable for keeping up the training of our Staff Officers, for we must remember that, except at the large military stations, they do but little practical work, and are indeed scarcely more than office clerks.

A General and his Staff should know their district thoroughly, should have a distinct plan on which to defend it, should have their arrangements for mobilizing the various forces in it clearly arranged, and should be constantly improving and working up the necessary information as to the resources of their district with this view. Surely our Officers are fully as capable of undertaking such duties as those of foreign Powers.

To sum up, therefore, our system of education before military life is entered on seems to require but little alteration. On the other hand, considerable alteration is required in the system of teaching and training after entry. We must be more practical, and as the sole means of ensuring a proper state of things, the standard by which men and Officers are judged must be altered, so that it will really show their capacity for war.

Time has only allowed me to sketch briefly what might be done, but if I have succeeded in drawing attention to the necessity for alteration, I shall consider my task more than half accomplished.

TABLE A.

Showing Defeats sustained by the British Land Forces from 1707 to 1809.

Date.	Place.	Particulars.
1707	Almanza	Galway defeated by Berwick; 5,000 killed and wounded, 10,000 prisoners, all the baggage and artillery lost.
1709	La Gudina	Galway again routed.
1710	Brihuega	Stanhope capitulates to Vendome.
1741	Cartagena	Admiral Vernon and General Wentworth repulsed by the Spanish under De Eslava.
1745	Fontenoy	Cumberland defeated by Saxe.
1746	L'Orient	Admiral Lestock and General Sinclair fail in an attempt to destroy the port.
1747	Lauffeld	Cumberland defeated by Saxe.
1755	Fort du Quesne ..	Braddock defeated and killed.
1757	Rochefort	Admiral Hawke and General Mordaunt fail in an attack on.
1757	Closterseven	Cumberland capitulates to Richelieu.
1758	St. Cas	Bligh's force repulsed by d'Aiguillon.
1777	Saratoga	Burgoyne surrenders to Gates.
1781	York Town	Cornwallis surrenders to Washington.
1782	Port Mahon	English garrison surrender to De Crillon.
1793-95	Netherlands	The Duke of York suffers a series of reverses, and the British are obliged to abandon Holland, and embark at Bremen.
1798	Ostend	Coote taken prisoner.
1799	Holland	The Duke of York capitulates at Erckmar.
1800	Ferrol	Pulteney fails in an attack on the town.
1806	South of Italy	After a success at Maida, Stuart is obliged to leave the country.
1807	Buenos Ayres	Whitelocke capitulates.
1807	Egypt	Fraser defeated by the Turks at Rosetta and compelled to withdraw.
1808	Sweden	Moore sent on a futile expedition.
1808	South of Spain	Spencer employed in a number of movements leading to no result.
1809	Italy	Fruitless and aimless operations of Stuart with an expedition from Sicily.
1809	Walcheren	40,000 soldiers aided by 245 ships of war are wasted in an enterprise under Chatham and Strachan; the army destroyed by fever.

Affairs in India and enterprises entirely conducted by the Navy are not referred to, our Officers under the East India Company, and our Admirals being almost uniformly successful in this period.

TABLE B.
WOOLWICH ACADEMY.
Admission Marks.

Existing.		Proposed.	
	Marks.		Marks.
Mathematics.....	6,000	Mathematics	6,000
English	2,000	English.....	2,500
Classics { Latin.....	2,000	Latin	2,000
{ Greek.....	2,000	Greek	1,500
French.....	2,000	French	2,000
German.....	2,000	German	2,000
Italian, Russian, Spanish, or Hindustani	2,000	Italian, Russian, Spanish, or Hindustani	2,000
Experimental sciences	2,000	Experimental sciences	1,500
Geography and geology.....	2,000	Geography and geology	1,500
Freehand drawing	1,000	Freehand drawing	500
Geometrical drawing.....	300	Geometrical drawing and descriptive geometry....	750

TABLE C.
SANDHURST COLLEGE.
Admission Marks.
Preliminary Examination.

Existing.	Proposed.
Geography. Euclid, Book I. Arithmetic. A modern language. Handwriting and spelling.	The same, with algebra up to simple equations.

Further Examination.

Existing.		Proposed.	
	Marks.		Marks.
Mathematics.....	3,000	Mathematics.....	3,000
English.....	3,000	English.....	3,000
Latin.....	3,000	Latin.....	3,000
Greek.....	2,000	Greek.....	2,000
French.....	2,000	French.....	3,000
German.....	2,000	German.....	3,000
		Any European language or Hindustani.....	2,500
Experimental science.....	2,000	Experimental science.....	2,000
Geography and geology.....	2,000	Geography and geology.....	2,000
Freehand drawing.....	1,000	Freehand drawing.....	500
Geometrical drawing.....	300	Geometrical drawing and descriptive geometry....	750

The CHAIRMAN: Captain James has now thrown down the gauntlet, and I think he has laid a very good foundation for discussion. I see present many Officers who have great experience in questions of training for the Army. I trust that some of them will enter the lists, and give us the benefit of that experience.

Lieut.-General Sir BEAUCHAMP WALKER, Director-General of Military Education: In opening this discussion I certainly am not going to enter into any controversy with Captain James, and for this very good reason, that I concur very heartily with a great deal that he has said. But I am not sorry to have this opportunity of pointing out that many matters to which he has adverted have not only already been carried into effect, and that others are still under consideration. In the earlier part of his lecture he adverted to the fact that our Officers are certainly, as far as physique is concerned, quite up to the desired standard; afterwards, I think, he adverts to the fact that the class of men who come into the Army now are very much the same class as those who entered it when I went into the Service. On both these points I do not only concur with him in opinion, but I speak from statistics. I have every now and then careful statistics sent up to my office from both Sandhurst and Woolwich, and I find that the class of men who enter now are exactly the same class as those who entered the Service forty-four years ago, with the sole exception that we do not get quite so many rich manufacturers' sons, because they will not do the work of the present day. I had not long arrived in England from foreign service before I was put on the Committee to consider whether a physical test should not be added to the competitive examination; and, after going carefully through the evidence laid before us, I think I may say, with the exception of one or two members of the Committee, we came to the conclusion that nothing of the kind was wanted. From my observation I can only say that a more stalwart, sturdy set of fellows than the cadets at Woolwich and Sandhurst I do not wish to see in any Army; and as to physical training, that is a considerable portion of their occupation. I do not think we have any reason to interfere on that point. I think, therefore, that Captain James will see that I quite concur with him. He has a considerable number of men passing through his hands at the present time, and is also able to see whether they are the weaklings that we have been told come in at the present day. A little further on he adverts to the very poor place which foreign languages hold in both examinations at Woolwich and Sandhurst. I cannot say what will take place, but for the 30th and 31st of this month I have been summoned to a War Office conference to settle

this question, which has been for a considerable time under consideration, and has been most strongly advocated by the present Secretary of State for War, who will do everything in his power to give modern languages a greater prominence than they now hold in examinations. Also, as regards the question of geometrical drawing, the question of giving a higher standard of value to geometrical drawing has been mixed with these other questions, and remains for settlement at the same date, and I hope will be carried. The subject was put forward from Sandhurst principally, where it was stated that the present low value—only 300 marks—given to geometrical training sent men in who were really not capable of receiving the beneficial instruction which it was necessary to impart to them. That algebra, as far as simple equations, shall be added to the preliminary examination I think is most necessary. The question has already been submitted, and is now being considered, previous, I may say, to knowing that Captain James was going to bring it forward in this day's lecture. I quite concur with him in putting a very high value on the Militia candidates who now come into the Army. I did not do so four years ago; the examination was a farce, it has been made a reality; and the consequence has been that qualification only being required at Sandhurst, and competition giving the spur to the Militiamen, those who come out at the head of the list are, as I have reported to His Royal Highness, in every respect quite as desirable Officers for the Army as any who come out of Sandhurst. There is no doubt competition has induced great earnestness in this class of gentlemen, and they have worked up to the standards fixed with great eagerness. Why the standard of qualification for entering Sandhurst was fixed as low as it has been in past years I am not very well able to say; that is a question which would be better answered by the Civil Service Commissioners, in whose able hands this question mainly rests. Captain James afterwards speaks about text-books, which are compiled by professors. One of the first things I endeavoured to put an end to when I came into office was this very fact. In the first place we were overwhelmed with text-books; there were no fewer than six—I will not be certain that there were not seven—on military surveying. I have been three years engaged on this question, and have now only just succeeded in getting the first portions of a standard text-book for the Army into print. That text-book will be purchased by the Government, and will be sold at a moderate price, and there will be no other text-book allowed. If it please the authorities to keep me in office, and I am able to do so, I hope to put the whole of the text-books on the same footing, unless, except for abstract subjects, I can do away with text-books altogether. I think they are one of the greatest mistakes that can exist. I think the idea of having text-books on tactics is simply nonsense. You cannot find one man so superior to all others that his ideas alone are fit to be the book from which all knowledge is to be taken. Those who instruct and who ought to be capable men should be left to teach tactics in accordance with the movements of the present day. Military topography and field engineering cannot be taught without text-books: certain laws must be laid down, and they must be established; but as far as regards tactics and military law, I do not believe there is anything further necessary than in military law, the written law, and in tactics the ability possessed by those who instruct the young men. As regards Captain James's remark on questions connected with drill I intend to offer no opinion whatever. I think that subject will be much better discussed by Officers who are more intimately connected with the active drill and training of troops. I really have nothing to do with it, and it would be a great pity that I should trench upon what they will do so much better. But in reading this paper, when Captain James came to the questions connected with cavalry, I could not help thinking of the most valuable works I know on this subject which have never been translated into English, and these are my old friend Verdy du Vernois' "The Cavalry Division in its relation to the Army." I believe the works on infantry have been translated, but the cavalry have not, and I am sorry to say, after a short correspondence with a very good friend and earnest cavalry Officer, we could come to no conclusion the other day as to how it could be done other than by subscription. A very expensive work has just been published by the Intelligence Department—the work of General Von Schmidt—and it appears that there is no money in hand which is available for the translation of Verdy's "Studies on the leading of Cavalry." I am very sorry for

it. I offered to pay my quota if others could be found to assist in the matter, and shall be very glad to do so at any time if it is found feasible. I most heartily concur with Captain James in the wish that we might have what are called "schools for non-commissioned officers;" they are about the most admirable institutions that exist in Prussia. I took very great pains to see all that I could while I was there, and I should be extremely glad to see them introduced into this country. There is an admirable institution there, to which he probably adverted when he said, "It seems to me if new schools of this character were formed, a uniform system of instruction in drill might be taught so as to ensure uniformity of teaching throughout the Service." That is what is called the Battalion of Instruction, and is established at Potsdam, being open ten months in the year, to which a certain number of non-commissioned officers and privates are sent in proportion to the corps, divisions, brigades, and regiments; they are thoroughly drilled under the eye of the superior military authorities, and go back to their regiments, carrying to them the one uniform system which prevails in the Service. It is a most admirable institution, and no country would be at a loss that would introduce it. I think if Captain James would look at the proceedings of the Committee in which I was aided by those two very able men—Sir Archibald Alison and Sir Evelyn Wood—some two years ago, he would find that same blot which he has hit, namely, the very careless recommendation by Commanding Officers of Officers as regards their fitness for entrance to the Staff College, has been, as far as laying down regulations can go, pretty well met. I cannot be answerable for individual negligence and indifference to what I should call common honesty; but we certainly laid down a system which, if adhered to, will prevent any Officer being sent to the Staff College who is not, from various qualifications, really worth the two years' expensive instruction which he receives there. French will be obligatory at the Staff College, but it was impossible to introduce that rule at first. After the year 1884, it will be obligatory. You cannot introduce a change of that kind, making one thing obligatory and the want of it exclusive, without giving due notice; there is a certain fairness and honesty due to everybody, and that I think we have met. The regulation commences after next year. After that date, whatever language an Officer intending to qualify for the Staff College takes up as his entering language, he must also possess a certain knowledge of French. I should like to have added German, but it would hardly have been fair. French is the language into which the military works of all other countries are translated. It is the one general language, and it is the one language of which every man ought to possess a knowledge if he has but one, and I do not think any man can study his profession properly who is not proficient in French, unless he has German at his finger ends. As regards reconnaissance, which Captain James has also adverted to, I may mention that the Committee to which I have before alluded obtained from the present Secretary of State for war an addition of 100*l.* a-year to the allowance for reconnaissance at the Staff College, and certainly, if I saw a tender spot in any Minister of War, I should be very happy to endeavour to get it still more increased. I believe it to be the most valuable instruction that is carried out there. I am very much obliged to Captain James for putting on my shoulders the choosing of the instructors and professors at all three military colleges! There is no doubt that I do, to a certain extent, possess the power of putting a spoke in any man's wheel whom I find not to be worthy of the post for which he is recommended, but it is a very difficult thing to put this upon one man. I have passed so much of my time on foreign service that I really know very little of the younger or young middle-aged men in the Service, and when I first took up office I came back from a very long tour of foreign service, and had I had that duty imposed upon me I should not have been able to fulfil it. Probably Captain James will say, "You ought not to have been appointed Director-General of Military Education." I suppose I ought not to have. I have tried to fulfil the important duties of the post to the best of my ability, but I believe I am about the worst man in the world for it. But I think when we remember the names of Colonel Hale, Colonel Richards, and Colonel Parsons, even now after four years' experience I do not know where in the whole Army there are three men abler in their several professorships than those three gentlemen whom I have named. The question of shortening the course at the Staff College was very earnestly debated by Sir Archi-

bald Alison, Sir Evelyn Wood, and myself. We took evidence wherever we could get it, from every General Officer in command, from every General Officer who had served within the last five years, from every Officer commanding a regiment, from all the Officers who had passed the Staff College that we could lay hands on, and, after considerable enquiry, we found the testimony almost concurrent that to diminish the time passed at the Staff College would be a great mistake. I am satisfied that there was no more prudent decision come to during the whole of that enquiry than the determination not to diminish the time at the Staff College, for I believe the two years there are invaluable. I do not say it so much on account of the education imparted, but it is that men come from different regiments, some from branches of the Service very little mixed up with the others: they rub shoulders with other men, their comrades know more about them even than the commandant and professors, and the two years are almost indispensable for eliciting whether men are possessed of the tact and discretion that a Staff Officer must possess; for the most learned Staff Officer in the world, if he wants tact and discretion, only does mischief. Therefore, we came to the conclusion that the time should not be shortened by one day, and that the two years was a fair time. In Prussia, it is three: that may be a little too long, but they can spare Officers more easily than we can. One of the difficulties we had to contend with was, that others had to do duty in the regiment during the time these men were away. As regards another point proposed by Captain James, I can only say I most heartily concur with him. I have been endeavouring for more than a year and a half to get the system first proposed by Lieut.-Colonel Bengough of the Middlesex Regiment carried out, by which Officers should pass in modern languages without going into any college at all, and I have very great hopes that it may be eventually approved. The whole scheme has, in fact, been approved, but financial difficulties have presented themselves and prevented its being finally carried out. The proposal is that the theoretical examination should be held in London at such times of the year as would suit Officers, in fact, during their leave; that the examination should be of the most searching character, and no mere smattering of language should suffice for a certificate of qualification, but that it should be equivalent to the higher standard which is adopted at the Staff College. I am very much obliged to you for listening with so much patience to the dry details I have put before you, and I am very much obliged to Captain James for having given me the opportunity of mentioning them.

Lord CHELMSFORD: Sir Beauchamp Walker said in his opening remarks that he did not intend to touch upon the question of drill which has been opened by my friend Captain James, and as one who for thirty-eight years has taken a very deep interest in the question of drill, I trust I may be permitted to make a few remarks on the subject. I only wish that the benches of this theatre had been fuller, so that more Officers might have had the advantage of hearing the very interesting and able lecture that has been given to us. I am quite sure all present here, and all those who will read this lecture, will say that the Army is deeply indebted to Captain James for the remarks he has made. On most subjects on which he has touched I most heartily agree with him, and if I differ with him to a certain extent regarding certain points as to drill, I daresay if we come to discuss the question together, it would be found that there was no real difference of opinion, but rather that time did not admit of Captain James entering as fully into the subject as he might have wished. What I think the Army at large is deeply indebted to Captain James for, is the stress he has laid upon practical education. We hear a great deal now about education, and of course education is primarily based upon theory and upon book learning; but in the Army, theory alone is of no use at all. However deeply an Officer may be read in all the tactical text-books written for his instruction, that will not make him lead his company into action or perform the different smaller tactical duties which so often devolve upon a company Officer with any chance of success, unless he has had that practical education upon which Captain James has justly laid so much stress. As there can be no doubt on this point, it is no use discussing further this question of practical education, except so far as to express a hope that what Captain James advocates so strongly may be carried out to the fullest extent possible. Captain James has

touched upon the drill-book, and upon the large quantity of matter in it which is really unnecessary to be taught. To a certain extent I concur with the lecturer. I think the drill-book has become obsolete, it is not in accordance with the tactical training of the age, and I am quite sure that the authorities at the present moment are of opinion that some change is necessary. But I venture to point out that much care and attention will be required in making this change. It is very well, of course, to say that a large number of manœuvres in that book are now practically useless, and never could be adopted in modern warfare; of course, we know that the old two-deep line has disappeared as a tactical manœuvre in the face of an enemy; but, at the same time, I am one of those who have still a firm belief in the efficiency of steady drill, and of its importance as a training for young soldiers. As a Commanding Officer of some years standing, at a time when the whole education of the Army is under discussion, I am anxious to state my firm conviction that steady drill is indispensable as an aid to military training and discipline. It may seem very absurd to move soldiers about in the same way as was done in the time of Frederick the Great, or of the Duke of Wellington; but, at the same time, it must be remembered that you have not only to teach young soldiers what they have to do when they go on active service, or are before an enemy in the field, but to instil into them that feeling of cohesion, that feeling of strict obedience to the words of command of their superiors in rank, in fact, that spirit of true discipline which is the foundation of all military education. This preliminary steady drill training brings the minds of all ranks into that state which will enable them to take the best advantage of the time when they come to be taught the higher and more important tactical training for actual service in the field. Whilst on this subject I should like to point out that in our infantry attack formation, it is absolutely essential that the principles which brought our troops into action in the steady shoulder-to-shoulder advance should not be lost sight of. I am certain that a force advancing to attack an enemy in position in the so-called attack formation has the greatest chance of success if it does so in the *spirit* of the old two-deep line, and not, as is so often seen at manœuvres, in the skirmishing formation, where each individual is allowed to exercise his own discretion as to taking cover, &c. As regards the higher education of non-commissioned officers, it is a want which all Commanding Officers have felt. Non-commissioned officers have not the opportunity of receiving that higher tactical and professional education which is so essential if they are to be the real assistants of the company Officers, and I am quite sure there is not a regimental Officer who would not fully endorse what Captain James has said as to the importance of giving to non-commissioned officers, as well as to Officers, the education which he has advocated to-day. As regards musketry instruction, there again one cannot but concur with the lecturer. I only wish every soldier could go down to the butts every day in the week and practise; but unfortunately the question of expense crops up, and I am afraid it will be found difficult to find the means of carrying out this change. No doubt the deliberations of the Committee, of which Sir Daniel Lysons was the Chairman, will bear fruit, and we shall see many valuable tactical alterations made in the course of instruction. It must, however, be always remembered that the recruit joins the Army absolutely ignorant of the rifle which he has to take in his hands. I can well recollect, when a musketry instructor at the commencement of the Crimean War, a soldier coming up to Kilburn where the Guards' shooting-ground was to fire at the target. He was handling his rifle just like a pitchfork, and I said to him, "My man, have you ever fired a gun off?" "Naw," said he, "never seed sich a thing before in my life." That was the kind of man we had to deal with then; that is the kind of man you have to deal with now. Although the educational attainments of the recruit are far higher than they were thirty years ago, yet as far as his knowledge of a rifle is concerned it is absolutely *nil*. Therefore, it must be remembered that, without a considerable amount of steady musketry drill which will give the man confidence in his weapon, it is no use taking him to field musketry training. I would much rather have a man go into action with me who had been thoroughly well taught at the fixed target, than one who had only gained a superficial knowledge by being taken at once to field firing, where he could not tell whether he hit the target or not. I must apologize for having spoken at such length. Military education is a subject upon which I feel

a very deep interest, and if anything can be done to assist in carrying out the drill instruction of the Army in a spirit more in accordance with the age nobody will rejoice more than I shall.

Colonel CLIVE: I did not intend to make any remarks upon Captain James's able paper because he knows well that I agree in principle with him, and I only differ as to the means by which our common object will be attained, viz., to get the best men in the Army to the front. He considers it an evil that Officers commanding regiments do not exercise their veto more frequently in preventing Officers whom they consider unsuited for Staff work from competing for the Staff College, and the Director-General has told us the admission of such men is not the fault of the Educational Department, because they continually try to prevent it by framing the certificate for the Commanding Officer's signature in more stringent terms. To show that Commanding Officers who thus act are not without advocates, I venture to say that I think they are quite right to put the largest and most open construction upon the certificate, both from their own point of view, and also from that of the candidates. As a Staff College candidate, I say, how can any Commanding Officer tell whether I am fit for Staff work or no? Possibly he himself may know nothing about it. And as Commanding Officer, I say, how do I know that such and such a one may not turn into a good Staff Officer, when once he has interesting and responsible work to do? I believe Commanding Officers conscientiously do their best, but they do not claim to be infallible; and we all know cases of Officers who in peace time and home service turn only to pleasure, who in service have turned entirely to work. I suppose shortsighted and unsound men ought to be rejected, though even this is open to argument seeing how many varieties of Staff work exist; and it may fairly be urged that until there is a dearth of sound candidates, there is no reason why we should employ unsound ones. I am of opinion that what we want in the Army is Officers *who know*. Admit as many as possible to the Staff College. Educate them, and pass them out, and when the number of men qualified by *p.s.c.* in a battalion is five times as great as now, General Officers will only have to ask the Commanding Officer for his best Officer for the particular service, and the Commanding Officer will be proud to send him up. If it is answered that if unsuitable men enter, so they will pass out qualified for, and get Staff employment, I answer that the chances of their doing so will be much diminished; and, moreover, that the proper remedy is to appoint Staff Officers (from Brigadier to Brigade-Majors) on probation for one or two years, as we appoint our staff sergeants: confirm them if found good, return them to half-pay on their regiments in the contrary case. The very same reasoning applies to confidential reports. As any Commanding Officer knows, the entry in these may either help an Officer on, or may blight his career; and that is a very serious responsibility for a Colonel to take, unless he is sure he is right. Nor would I ever put anything about an Officer in a confidential report that I was not prepared not only to prove, but to read out to the Officer before writing it down. The measure of the value of a confidential report on the Officers of a battalion is after all only that of the accuracy of judgment of the Lieutenant-Colonel who signs it, and if that (which the fates forbid) should not be great the whole fabric collapses. The only escape from the dilemma, I venture to think, is not by adding restrictions and limitations, but by widening the doors of entrance so as to have plenty of Officers qualified and instructed, and when the good posts of the profession are vacant, they will soon be worthily filled by the best men.

Lieutenant-Colonel C. F. COLVILLE: I take a great deal of interest in the subject of education at the present time, and I propose to refer briefly to the way by which Militia Officers enter the Army. I will not detain you by going into the reasons on which I have based my conclusions; but it has appeared to me, after considerable thought, that it is a question whether the present system of competitive examination by Militia Officers is the best, and whether a high qualifying examination would not be preferable; because I see that Officers are apt to be disgusted with the subjects on which they are examined, and those are the very subjects in which they should take a very great interest after they join the Army. A high qualifying examination might tend to lessen that. The second matter which it appears to me might be capable of slight improvement is, that twenty-two years of age is too old for an Officer to join the Army. It is very desirable that an Officer should join the Army

when he is still impressionable and capable of receiving the seeds of *esprit de corps*, and not at an age when he has formed his opinion of men and things, and has joined the Army prepared to criticize his Commanding Officer and his regiment too; that he should be of an age when he is capable of receiving impressions and of believing that his own regiment is the best in the Service. The other point on which I think some improvement might be made is, that greater care might be taken that Officers joining the Army through the Militia are socially qualified to hold the position of Officers, that they should be in fact gentlemen in thought, word, and deed, and that greater care might be taken in that respect. With this view I would submit that, in addition to the two trainings which are required of Militia Officers, it would be advisable that they should be attached to a line regiment for six months, and that a report not only by the Colonel of the militia regiment, but the report of the three senior Officers of the regiment should state whether they are socially gentlemen and fit to be received as Officers in the Army before they are subjected to an expensive education to compete for this competitive examination. As regards the Staff College, having passed through it myself, I can only say I entirely corroborate the views expressed by Captain James both as to the entrance and more immediately to the study after you get in there.

Lieutenant-Colonel SANDYS: There are one or two points on which I should like to make a few remarks. I rise, Sir, with some diffidence after your saying in the first instance that there were many Officers present of great experience on these educational subjects, because I can lay claim to very little of that. I would, however, first venture to speak on the subject mentioned by Colonel Colville, viz., with reference to ascertaining the social qualifications of Officers who have passed through the Militia. At this present time I am serving in a Militia battalion, the 3rd Battalion of the Loyal North Lancashire Regiment. I had the advantage of doing twenty years' Army service before I entered the Militia, and if I may be allowed to say so, I think the senior Officers of a Militia regiment are quite capable of judging of the social qualifications of those candidates for the line who filter through their ranks into the Army. I can only say, from my own experience after six years in the Militia, we have had as fine a body of young men attached to us as one would wish to see anywhere, and I may say that, almost without exception, in no case has any one failed in social qualifications. There is an educational point which occurs on one of the tabular statements to which I would invite attention. It is a matter of opinion, but still it is worth while noting; it is with reference to the marks allotted to the Greek and Latin languages respectively. I observe in the Woolwich Academy Table that 2,000 marks are given for Latin and 2,000 for Greek, which Captain James proposes to modify by reducing the Greek marks to 1,500. I see in the Sandhurst College Table there are allotted 3,000 marks for Latin and 2,000 for Greek, which the lecturer proposed to retain in the same proportion. I venture to express an opinion that those marks should be reversed, and that in future 3,000 should be allotted to Greek and 2,000 to Latin, for this reason, that Greek is an exact language and Latin is not. Latin is a language which admits of double interpretations and allows a certain amount of opposite renderings in its translation while the Greek is absolutely correct, and expresses exactly in words the meaning it is intended to convey; it is as poetical as the Latin, and far more mathematical in its definitions, and as a means of mental training to exactness of expression it should rank higher as a language than Latin and receive more marks. With regard to the question adverted to by the Director-General of Military Education, that the quality of Officers in point of "muscle" is considered to be as good as it ever has been in former times,—that in point of fact the quality of Officers has not changed at all, in that opinion I am decidedly at one with him, but I think in the present system there should be some public recognition of the fact that a man is as good in his "muscle" as he is in his "brain," and that there should be a certain number of marks attached to the fact that a man has attained to a recognized physical standard. I believe that question was once brought before a Committee of the House of Lords, and for my own part I do not see why it was not carried through. The lecturer also spoke rather disparagingly of "retiring from one flank in rear of another;" most of us who have been in the Service a long time know that that manœuvre is a somewhat old one, and none the worse for that perhaps, and

besides it is not without its advantages. I venture to put this imaginary position before the meeting. We will suppose that in the present loose formation there is a rearguard in line extended on the reverse side of a river and in contact with the enemy, covering the bridge-head work, and allowing its component parts to retreat in succession from one or both flanks over the hedge behind it. Without that system of retiring from one flank in rear of another, I should like to know how in this case he proposes to bring his troops in anything approaching formation over a single bridge without their going over like a flock of sheep, except by this old manœuvre, which would in that case prove to be a friend in need. Besides, I venture to think that many manœuvres from the old drill, if well selected, would prove to be of the very greatest importance in teaching steadiness, especially to the young troops we now have; for men should be drilled to steadiness and unity of action, and mechanical obedience in masses shoulder to shoulder, before they can be trusted to act with any certainty in the loose formations necessitated by the heavy fire of modern arms, or before scope can be allowed to individual intelligence: the objects to be attained, both by drill and field manœuvres, should be—1st, steadiness; 2nd, rapidity; 3rd, individual intelligence.

Lieutenant-Colonel COLVILE: I did not wish in the least to infer that Commanding Officers of Militia regiments are not quite as capable as any line Officer of judging of the social qualities of their Officers, but what I wished to imply was that the two trainings the Militia Officers had of one month each did not give them sufficient time to form a correct opinion, and that it should be augmented by six months' training with a line regiment.

The CHAIRMAN: Gentlemen, the whole subject has been so fully discussed that there remains but little for me to add. There are, perhaps, one or two points on which I might make a few remarks. I am glad to see that in the latter part of the lecture Captain James has very much approved of practical knowledge, and has urged its necessity, although at the commencement it rather seemed from the second paragraph that theory was set up in opposition to practice. Now we all know that theory, without the practical knowledge which will enable an Officer to carry it into effect, is useless. A good deal has been said by one or two gentlemen with regard to the physique of the Officers, and reference has also been made to a Committee at the War Office that considered the proposal of giving marks for athletic exercises; but I think the real point is not generally recognized, and to my mind it is a very important one. It is not that we require a man to be able to go through athletic exercises or that we want a particularly active man in body, but the fact is, there are different qualities of mind in the same way that there are different qualities of body. I think anyone who has studied character will have observed that sometimes you meet a man possessed of a mind that can originate, invent, work on its own impulses. This mind will generally grasp a subject very rapidly. In most cases a man who possesses it will be averse to great study or close application; he arrives quickly at his object, sees what is meant, and therefore dislikes plodding. He will generally be a man of genius. Now, on the other hand, how often do we see a man with a mind that is constantly acquiring and storing knowledge, a man who will be found in his study reading and amassing information, but who has little if any power of applying it practically or of originating or acting on the impulse of his own mind. He will imitate; if you let him sit down in his room and write out a theory he will do it beautifully, but if asked to carry it out in practice he will stand with his mouth open perfectly incapable of doing anything. I think in all our examinations, our tests are made to gauge the amount of scholastic knowledge a man has acquired; but there is no test of the quality of a man's mind, and that I think is what we really want more than anything. In the Staff College course the reports of General Officers are required as to the students' knowledge of Staff duties in the field. There you come nearer to it, because in that way you can better test the quality of a man's mind, and see how he can carry out intentions rapidly and act on his own responsibility. For instance, I had not long ago four young Officers from the College attached to my staff. At a manœuvre I wanted to find out where a cavalry regiment was that was quietly stowed away out of sight. I sent all four Officers to try and find it and to bring me a report as to where and what it was. One soon came back and told me where the regiment

was, its strength, and everything about it. Two others in more or less time found out something about it, but the fourth plodded about the whole of the day and never found it at all. Now, this man was a very highly educated man, and a very clever man, scholastic I believe, as far as acquirements went, but absolutely useless in the field. I think this proves that we want a good test of the quality of a man's mind. I may say, generally speaking, I agree with Captain James in nearly all he has said. Perhaps I have had more to do with Field Exercise books than most men in the Army, and I fully agree that our drill should be made, especially now that our soldiers have such a very short time to learn, as simple as possible. We must have a certain set of rigid movements; they teach discipline, as well as enable men to move together in military formation; and I think that the more we can teach men by drill to hang together, the better we shall be able to bring them up to the enemy at the last moment in some tactical formation in which only we can manage them and still hold them under command and discipline; for it strikes me we shall find that, when troops meet in action, those that are more entirely under discipline and under the command of their Officers at the last moment when they come into contact, will be the troops that will gain the day. I think it might, perhaps, be better if we adhered to a simple formal, rigid system of drill in the first part of our Field Exercise book, and have a second part to show how that drill should be applied tactically to the purposes of war in the field. With regard to musketry instruction, many of you know that I was President of the Committee assembled to report on the subject. I regret to say that I am not at liberty to give any information respecting it. We reported very fully, and I think we made some good suggestions; but the document has been considered strictly confidential. I can, however, so far say that we did propose many improvements in the direction mentioned by Captain James, and I trust a great many of them will some day or other be carried out. Naturally whatever you propose in the way of improvement means money, and we know that money is just about the very last thing one can get. I should like to say one or two words on the system of carrying out the training of troops practically in the Army. There are two great difficulties that stand in our way. If we were merely required to propose some system which we could set to work and carry out week by week, month by month, through the season, it would be easy enough; but the first difficulty is that there are so many things to be learned in different directions under different instructors that our training becomes somewhat desultory. For instance, I go to see my battalions at Aldershot where I have ordered that all the Officers shall be present at every parade during the spring drill, that the Subalterns shall instruct their men personally, that the Captains shall superintend, and that the Field Officers shall also be on parade. I find only about three or four Officers on parade. Yesterday I went to see one, and found the Colonel and the Lieutenant-Colonel and four Majors,—I should say Major-Captains in distinction to the old class of Major; there was not a single Captain proper on parade, and there were only five Subalterns to instruct a battalion of over 1,000 strong, all young soldiers. I asked, "How is this?" and the reply was, "Oh, Sir, Captain So-and-So is Adjutant of Volunteers; there is another on a district court-martial; another at the Staff College; another with the Militia; another at the dépôt; another going through a garrison course; another is Brigade Captain." They were all away. The same with the Subalterns: one was sick—he could not help that; another was signalling; another at the gymnasium; another acting paymaster, and another at musketry, &c. What with courses at Chatham, garrison classes, signalling, musketry, Hythe, gymnastics, Staff College, &c., there are very few left for instruction with their battalions. The second great difficulty is consequent on our organization. I go to see a weak regiment. I find no sergeants. The other day I called for a return, and I found that out of twenty-five platoon sergeants twenty-three were employed somewhere else. In this case where could you have found any sergeant to go to a school of instruction? There was only a balance of three, who had to instruct all the companies in the regiment. Then, looking at the men, I found that out of the eight companies there were only four very small companies made up from all the eight on parade going through instruction. I saw one squad principally composed of men each with four or five good conduct stripes: it was very evident what they were. The fact is, with these

weak regiments, and they are the bulk of our Army at home, remember, as soon as the men are well trained, and have had about one year's service, they are sent abroad to feed the battalions on foreign service: then a fresh batch of recruits comes up, and they are trained to replace them and form the next draft. The only men you really can get to go through their spring drill, or a course of instruction, are the Officers' servants, band, and a set of old men going on to pensions who are drilled over and over again at the spring drill, poor fellows, until they retire ultimately on their pensions after their twenty-one years' service. You will, therefore, see that although we may lay down a very admirable system of instruction and training, there are a good many difficulties in carrying it out practically. At the same time we all have the same object in view: we wish our Officers and soldiers to be trained and instructed in the very highest possible degree that they can be brought to. We have a small Army, but it should be of the highest quality, and we can only endeavour by discussing matters and hearing what gentlemen like Captain James can say on the subject, to get at something that is really practical; but there are difficulties. We must now return our thanks to Captain James for his kindness in giving us this most excellent lecture.

Captain JAMES: There is very little for me to say in reply. Sir Beauchamp Walker spoke about his sense of the responsibility he would incur as Director-General of Military Education if he were required to appoint the instructors. I am afraid that such responsibility is inseparable from so responsible a position as that he holds, but I cannot help thinking that they should be appointed by him, as he has the means of ascertaining what the qualifications of Officers are, better than the heads of the various Colleges. Nothing could be worse for the Service at large than that an instructor should be incapable of instructing. I do not say that there are any Officers of this kind, but if there be, they certainly ought to be removed. So long as the heads of the various institutions appoint them, there is a certain amount of improbability that these gentlemen will report their own nominations as incapable. Sir Beauchamp Walker spoke of Colonel Hale, Colonel Parsons, and Colonel Richards. I had the honour of serving under the first two of those gentlemen at the Staff College, and the third is well known to military students as the author of an excellent book on military surveying. I am quite sure all who know these Officers would speak in the highest terms of them; but they do not comprise the whole of the past, present, and future staff of instructors at the Staff College and our other military institutions. I do not in the least attack any individual. I am merely desirous of altering a system which might lead to an incompetent instructor being appointed and kept on. Lord Chelmsford was quite right in saying he believed that he and I were likeminded on the question under discussion to-day. I quite agree with him that drill is the basis of steadiness. You cannot have a disciplined Army unless it is well drilled, unless the men are, so far as drill is concerned, mere mechanical agents. But I would also observe that you do not get this steadiness only by complicated manœuvres; you get it quite as well by easy manœuvres, such as are actually required in war, and that is the point in which our drill-book differs from foreign drill-books. Compare the Prussian with the English. The Prussian troops certainly drill with remarkable steadiness, and their field exercise is so simple that anybody here could take it up this evening and learn it off in the course of a couple of hours; but you could not do that with ours. We indulge, as it were, in the permutations and combinations of various manœuvres, taking one or two together; the Prussians do not. The question of the attack formation has been alluded to. I confess I am one of those who do not think the present attack formation of our infantry is altogether a good one. It seems to me that considerable confusion might arise from it, and there is nothing laid down by which this confusion is to be avoided. There is a great deal about the Lieutenant-Colonel commanding one line and somebody else commanding another. This is all very fine in theory, but how is it to be done under fire? An Officer would simply be shot down if he stopped on his horse, and if he was on foot he could not command such an extent of ground. The modern attack formation will and must consist of a number of fighting units (a fighting unit I define as being that number of men which can be led by one Officer under fire) acting together like the links of a chain, and the problem we have to solve is how, starting from the basis of a deployed

line, can you get these fighting units through the fire-swept space, so that they may have at the last moment a more or less resemblance to a coherent line, such as is necessary at the last moment for shock. One of the weak points of our plan is the pushing in of men anyhow into the front line. It seems to me that when the attacking line is reinforced, the men should be taught to segregate round their own Officers, so that when taking a support into the front line it should be taken more or less into a gap under its own Officer, so that an effort should be made to keep the links I have spoken of intact under their own Officers and formed of men of the same companies. It is all very fine to say a man must obey any Officer, but the men know the Officers of their own companies better, and therefore it should be distinctly the one aim of the attack formation to keep those companies intact up to the last if possible. With regard to the question of musketry training, I believe the only true system is first of all to train the man to hit on the target, and then take him out for field firing, but do not do so before he can hit the target. Colonel Clive spoke on the question of confidential reports, and I believe a very large number of us go with him. The question as to the value of confidential reports, however, depends entirely upon the man that makes them, but I still think that there is a better way of judging of the capacity of men than any number of reports, namely, seeing with your own eyes what they can do practically. Until you have some such system by which the qualifications of the junior Officers are to be decided, it is perfectly impossible to my mind to form any definite idea as to whether they are qualified or not. Lieutenant-Colonel Colville spoke about the social qualifications of candidates for the Army. I do not believe there is any doubt whatever that they are quite as good as ever they were. That gentleman's suggestion that Militia Officers should only pass a qualifying instead of a competitive examination would fail practically. How would those for commissions be selected from the qualified list? He asked me, with regard to the manœuvre of retiring from one flank in rear of the other, what I should do if I had a line extended in front of a bridge across which I wished to retreat. I see no reason for retiring such a line by a formal movement as a battalion; it should be done independently by companies, and would be impossible as a drill manœuvre under modern fire. As Sir Daniel Lysons said, and I have no doubt everybody will agree with him, field manœuvring should be a totally distinct thing from drill. Retiring from one flank in rear of the other is a very pretty thing for Horse Guards parade, but cannot be carried out when men are going down right and left, as they would be in a position like that. You would then retire independently by companies. There is not such a manœuvre in our drill-book, but it is within the capacity of Officers commanding companies to retire in that way. That is the difference between drill and manœuvring in the field; for manœuvring in the field you must trust to the individual intelligence of your leader, rigid drill formations cannot be made use of. With regard to the question of marks for athletics, on which two or three gentlemen have spoken, I am the last person to deny the necessity of having Officers of good physique, but there is no reason to believe that a man who can run a mile in 4 minutes and 50 seconds is a better man for the Army than one who can do it in 5 minutes. That is what the people who go in for physical tests are really aiming at. They have, perhaps, sons: "Tom is not much at mathematics, but he is no end at running 100 yards; he would do it in ten seconds any day." That is the real foundation of this argument. It is nonsense to look at the Army, and say the Officers are not physically all that is required. As long as a man has good health and can walk and ride, he is fit to be an Officer. With regard to the question of Officers and non-commissioned officers being away from their regiments, it is a very old story in the British Army. The Duke of Wellington, in the Peninsular Despatches, states how he found it almost impossible to keep up his regiments; there was an Officer wanted for this and that, and a sergeant was wanted for one thing and for another, and the consequence was the regiments suffered. I have no hesitation in saying that this system wants alteration, as materially affecting the efficiency of the Army. Similar reasoning applies to the men. Our companies and battalions are so weak, as Sir Daniel Lysons pointed out, that proper training is almost impossible. To my mind, a great mistake made in the recent reorganization of the Army was keeping the depôts separate from the home battalions. The latter should be itself the depôt, *i.e.*, must be localized and kept in one station always, and

it will have to be done sooner or later. Then as to the size of our companies. I am not one of those who think that the Prussian company is the ultimate perfection of all military organization. I think it is too big, but I think there is something between a company of about two men and a boy, as ours are now on a peace strength, and one of 250. A Prussian company on peace footing is about 112 men. If we had rather fewer companies per battalion, and therefore larger companies than at present, and if we put our depôts with the home battalion, as I suggest, we should have companies we could drill and train properly. Because localization is adopted, there is no need to banish some regiments to the North Pole. You need not fill up all the small stations in Ireland with local regiments, but I believe if the question were fairly gone into, did we consider what are our recruiting centres and where we should place our battalions so as to have the best situations for them, with the maximum number of recruits, it might be done quite easily, only we have never tried to do so. I do not think there is any other point to which I need reply.

Friday, March 31, 1882.

Major-General HIGGINSON, C.B., Commanding Home District, in
the Chair.

PROPOSED CHANGES IN MUSKETRY INSTRUCTION.

By Major C. K. BROOKE, East Yorkshire Regiment.

INTRODUCTION.

Mr. Chairman and Gentlemen,

THE few remarks that I am about to make were written in April, last year, and were not intended for publication; but having been asked to read them in this hall, I wish them to be considered as a contribution to, and not a summary of, what has been written on this subject within the last twelve months; and for their baldness and want of literary polish I must crave your kind indulgence.

The radical change in our Musketry Regulations, which is at length admitted to be necessary, is due to the fact that the field-training of our troops has almost been ignored. No proper distinction has hitherto been made between the training which enables our soldiers to hit a target, and that which will render their fire efficient in the field. Target practices and field training exercises are two distinct things, and must be kept so; but though distinct, one is supplementary to the other. Target practices must train the soldier how to fire under normal conditions; while field-training exercises must continue his training under abnormal ones, or those which represent as closely as possible the conditions he would encounter on field service.

In order to bring method into the discussion of this large subject, I will first indicate what I consider to be the defects in our present system of musketry instruction, and then state briefly the general nature of the changes advocated.

The cardinal defect in our present system is the principle of competition which governs it; this principle, aided by an elaborate bureaucratic organization, has stifled all ideas connected with war, and raised in its stead a gigantic system of rifle matches. This may appear a grave indictment, but I will endeavour to prove my case by showing in how many ways this principle of competition acts injuriously on the training of our men. In order to understand its action it will be necessary to consider how musketry is carried on.

First, the annual course for trained soldiers is commenced at a certain date, and lasts a prescribed period. Why? "In order that the Annual Practice Returns may be rendered at the appointed time." Thus competition places the obtaining of returns at a certain time first, and the necessities of soldiers' training second.

Secondly, competition causes musketry to be chiefly carried out in the summer, in order that high averages may be made; but is this a necessity? No. In summer, drill, tactics, and field-firing should be practised, while in the autumn, winter, and spring months, musketry target practices should be continuous.

Thirdly, musketry is taught from certain Regulations; if these are examined, it will be seen that only in paras. 79, 80, 83-86, and in Field Firing, is any reference made to field service. No instructions are given as to the limits within which individual firing is effective; no mention is made of how group firing on larger objects should be conducted, and no word is said of mass firing with different sights: in fact, fire tactics and the question of the expenditure of ammunition in relation to the objective, are completely left out, and why? Because competition is not benefited by this knowledge.

Fourthly, competition obliges musketry to be practised under certain conditions, viz., under the supervision of a musketry instructor—in a certain dress—with an unvarying programme—in fine weather.

In order to ensure that every battalion shoots under the same system, an Officer Instructor in Musketry is appointed to each battalion, and he, a subaltern, "is responsible to the Colonel that the drills and the target practices of the several companies are conducted with uniformity and in strict accordance with the Regulations."

The Major and Captains of companies are thus supervised by their junior Officer, and as competition requires that the regiment should have a good figure of merit, the Musketry Instructor in many good shooting battalions holds a very important position. Further, a system of professional coaching is gone through with in each company, so that a direct inducement is given to the man firing to surrender his own initiative, and to trust to his coach to direct him aright. This hardly teaches men to rely on themselves and thus to fire well on service; hence it appears desirable to do away with the appointment of musketry instructor, and to direct that companies should be exercised under the entire responsibility of their own Officers. The training of the recruits should be carried out by the Adjutant, so long as he occupies his present position, while the target practices and theoretical teaching should be conducted by a specially selected Officer, who might receive extra duty pay when so employed.

Since men are required to make a good score, they are ordered during their individual firing, and in skirmishing, to be in drill order, and actually 70 rounds out of 90 are fired without any encumbrances on the soldier—thus he

Musketry only carried on during a portion of the year.

Not sufficient reference made to Field Service in the Regulations.

Hampering conditions produced by system of competition.

The prejudicial action of the Musketry Instructor.

Men in drill order during target practices and skirmishing.

receives no training of how to fire when he is equipped as he would be on service; to give this training, men should fire principally in marching order.

The unvarying programme through which year after year good and bad shots have alike to pass, is caused solely by the necessity that competition creates for comparative results. That a good shot, having proved himself to be so, by fulfilling the necessary conditions in one year, should not the next year be put through a severer test in a different programme, seems extraordinary; since by going through other practices his training must be increased, while a touchstone is applied to his individual powers. Besides, his pride is stimulated by firing in a higher class, and at the same time his interest in his shooting is largely augmented.

The weather favourable to shooting is always selected: for if it rains slightly, the saying is, "We cannot fire to day;" if it blows, the same remark is made: thus the chance of practising under different atmospheric conditions is deliberately done away with on account of the competition that exists. This fault is often further developed on the ground, where sometimes it is said, "Wait a bit till this puff of wind is over," or till this little cloud stops the glare of the sun. Smoked fore-sights, carefully pencilled wind gauges, superintended or done by Officers or good shots, continue the lesson, and teach the men that to hit the target is the object and aim of all his teaching, and that to effect this he must be coddled by all interested in his obtaining a good score.

The training of recruits comes under another category, as of course it is necessary not to discourage them in their first attempts: therefore they should fire under as favourable circumstances as possible. I have not drawn up any programme for their instruction, as I consider our present system requires but little alteration. Two or three practices at a second class target, having a man's figure on its central 16", replacing those at ranges over 400 yards, would make it all that could be desired.

Enough has now been said to show in how many ways competition acts prejudicially on the musketry training of the soldier, without mentioning the temptations it creates to act not quite straightly; it remains to suggest how this complicated system can be got rid of.

The remedy appears to be simple; all that is required is that a simple annual return, a short summary of the company returns, should be sent to the General Officer commanding the District, to be by him examined; returned to the regiment with such remarks as may be necessary, and on its re-submission with the explanations of the Officer commanding the corps, to be forwarded to Army Head Quarters.

In order to test the efficiency of a corps, a body of men, not less than 50, taken at hap-hazard by the General on parade, should in his presence go through a programme detailed by him on the ground.

The report on this practice, with the observations of

Fine weather
generally selected
for firing.

Recruits to fire
under favourable
circumstances.

A simple annual
return to be rendered.

A system of
inspection by a
General Officer
to replace present
system of competition.

the Commanding Officer and the General, should also be sent to Head-Quarters: there a comparison of the different returns and reports sent in by corps could be made, and those not up to the required standard could be confidentially informed of the fact. Besides seeing the firing, the General would examine both men and Officers to ascertain that they understood both the theoretical side of the subject and fire tactics.

Now passing on I will briefly allude to some defects which I think exist in our detail of target practices, in our targets, in our ranges, and in our system of field firing.

Our target practices comprehend firing 60 rounds individually at six distances from 200 to 800 yards—5 rounds in volleys at 400, 600, and 800 yards—5 rounds in independent firing at 400 yards—and 10 rounds in skirmishing between 200 and 600 yards,—or 20 in field-firing. But in none of these nine practices, field-firing excepted, do the targets in any way represent the objects the men would have to fire at on service. Surely these objects should be portrayed in peace time, otherwise the men will be all adrift when called on to fire at men on service; where they will find no kindly rectangular lines to guide their aim on to the centre of their objective. Therefore men-targets must be considered necessary for training purposes—and as men in a fight move—appear—and disappear, these conditions should all be represented.

Accepting these targets as a necessity, it at once becomes possible to institute proper field practices, a more varied detail becomes available, the practices can be graded, and the men thus led to attempt more difficult ones as their skill increases. This development in the number and variety of the practices will get rid of the monotony and sameness of a yearly recurrence of everybody firing at the same targets and at the same distances.

Since I consider it necessary that musketry practices should be progressive in character, it follows that a man should not pass to another practice without having previously satisfied the conditions in the preceding one. It may be objected, that this is a retrograde step, but I cannot believe that the individual firing of the ordinary soldier at small objects is of any efficiency beyond 400 yards at the outside—therefore to teach a man to fire individually beyond this distance, when he cannot shoot well at a less, is useless. At ranges beyond 400 yards, as a rule, combined fire at a common objective would be carried out, either by groups or larger masses according to the distance and size of the objective.

In Appendix A I sketch out a series of practices for each of the proposed new practices; and for such practices I would suggest that as a minimum 90 rounds should be allotted, and a further 30 rounds for field firing.

In carrying out these practices no more than 10 rounds should be fired on any one day; the conditions of each practice must be fulfilled in the last 5 rounds fired consecutively; every man's shooting being arrested the moment

Character of present target practices.

Progressive practices to be carried out.

Proposed new practices.

Method of carrying out the practices.

when it becomes impossible that he can that day fulfil the required conditions.

For example—if in five shots a man had to make fifteen points in order to pass into the next class, and a hit might count either 2, 3, 4, or 5, then, if a man after firing his ninth shot had only made 9 points in his last four rounds, he would not be allowed to fire his tenth shot; because, even if he made the best hit, counting five, he would not make up the fifteen points required to pass him out of the class. With this system there would be no chance of a shot being thrown away, and the men's interest would always be maintained.

It will be seen from the table of practices that they are in each class divided into three categories, obligatory, progressive, and examinational. The obligatory practices in each class must be executed every year; and all, except the volley and independent firing which conclude the course, before any of the other practices are attempted. The obligatory ones successfully accomplished, the progressive practices are gone through, and lastly the test or examination ones are carried out.

To pass from the third to the second class, a man must first succeed in fulfilling the conditions of the practices 1 to 8 inclusive: then those of 9 to 12 inclusive, with an expenditure of only 30 rounds fired consecutively. Similarly, to pass from the second to the first class, and from the first to become a marksman, practices 1 to 8 inclusive must first be successfully accomplished, then practices 9 to 12 inclusive must be carried out with 25 consecutive rounds.

This programme, the framework of which is borrowed from Germany, is merely a sketch, showing how varied the practices might be made, and it is only offered as an illustration of the principles I advocate, viz. :—

That practices should be progressive.

That men should be classified.

That this classification should be obtained after a man has gone through a certain number of practices, and thereby gained confidence in his shooting; by requiring him to fulfil certain conditions with a certain number of rounds.

That no shots should be wasted.

That each man, irrespective of his class or skill in shooting, should every year fire a definite number of rounds at short ranges, and in independent and volley firing.

It may be objected that such a programme of practices would be very complicated and difficult to carry out. I think not; for I am of opinion that a varied series of exercises would become highly popular in our Army, where excellence in shooting is so keenly desired.

In order to make the shooting more interesting, all first class shooters for good shots should receive one penny per day extra pay. All marksmen a money prize in addition, and a certain sum should be allotted for distribution as prizes amongst third and second class men.

From what has gone before, it is apparent that an addition to our present iron targets should be made, and this I think should take the form of canvas targets on wood or iron frames—having pasted on their front a paper figure of an infantry soldier in blue uniform. These frames could easily be supported by an iron back rod.

The new targets should represent—

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| a. A man standing. | } A thin oval ring should enclose the vital central portions of these figures. |
| b. A man kneeling. | |
| c. The head of a man. | |

A slight mechanical arrangement would easily allow either targets *a.* or *b.* to be drawn across the range, or to fall backwards or forwards during a given length of time.

Besides these targets, and as a preparation for their use, I would suggest that the paper men figures should be pasted on the central 16 inches of the present third class target. Given the above additions to our present stock of targets, there would be a possibility of infusing some life into our now rather tame field-firing exercises. These should be left absolutely to the discretion of Commanding Officers, and if superior authority were present on the ground, it should only be as a spectator. It is the Colonel's business to train the men of his battalion.

By the use of a little brushwood, a few sand-bags or barrels, &c., and by raising a few mounds here and there, the ordinary range could be much disguised; and though, of course, in most places a frontal attack only could be made, yet animation might be imparted into the practice, by a skilful adaptation of the ground and a well planned arrangement of the man targets.

The men when practising field-firing should be formed into companies on a war footing: surplus Officers and non-commissioned officers to be on the ground as spectators. All descriptions of fire being utilized against the targets, and from various distances; the men would be taught confidence in their weapon, and receive a valuable lesson in fire tactics.

In order to give the men a practical idea of the range of bullets both laterally and vertically, it would be well, at large stations and camps, to make use of a certain number of screen targets; these properly arranged, and fired at from different distances, would show the men how their shots spread; and this would lead them on to see how a combined fire at each distance tends to cover a certain zone of ground with a complete shower of bullets. The theoretical part of this branch of instruction should be inserted in the "Musketty Instructions," together with tables and diagrams showing the spread of bullets, and the chances of hitting men in different formations, and at different distances. These the men would readily understand when they had seen a few shots fired at screen targets.

Man targets.

Field Firing to be left in the hands of the Commanding Officer.

Ranges to be disguised.

Companies to be exercised at the war strength.

Practical demonstration of spread of bullets by means of screen targets.

As rifle contests should be encouraged by all means in regiments, I would suggest, that for every bullet picked up and cartridge case returned to store, a round of ammunition should be issued gratis to the corps. To compensate, and otherwise remunerate the buttmen for the loss of the price of the lead recovered, I would give them a little extra duty pay. To further the recovery of lead, the butts could be raised a little higher; and if sufficient height could not be obtained, small ridges, about 20 inches high, could be constructed across the range at 10 yards intervals for a distance of about 100 yards in front of the targets. In support of the above suggestion for an issue of gratis rounds of ammunition, I need hardly adduce the fact, that the establishment of a Rifle Club in a regiment, as a rule, increases its efficiency in shooting, and raises its position in the classification of regiments.

Gratis rounds of ammunition to be given to corps, for all bullets, &c., recovered.

And here I may advert to the additional means of practising aiming afforded by the valuable invention which Mr. Morris will after the lecture fully explain to this meeting. I need only say that it consists in inserting into a Henry-Martini or a Snider barrel a small rifled barrel through which is discharged a miniature bullet, at miniature targets, and from a distance of 10, 25, or 50 yards. No change or alteration in the rifle is required, and the soldier has here a means of continually practising shooting in all weathers. It can, under supervision, be made use of in a barrack-room, a drill shed, or a barrack square.

Morris' system of aiming and sighting.

Taking into account the great difficulty that exists in the United Kingdom of arranging that men, not going through their annual course, should have some practice on the ranges: it seems as if in Mr. Morris' invention a means has been given us of carrying out in barracks, and in all weathers, the required supplementary practices.

With regard to the accuracy of the calculations on which this system of firing is based, I need only point to the diagrams B and C, Plate VII, which represent some firing I saw take place in a carpenter's workshop. The Officer who fired, Lieut. Foster, of the 8th Surrey Rifles, came to the place by chance when I was there, and being a good shot, kindly carried out some practices at different ranges. The result as recorded speaks for itself; but I would point out that, as a general rule, the shooting at each range improves after the first shot, and that personal errors with regard to sighting were readily detected, and easily corrected: all this proves distinctly that the rifle was under control, and that the ammunition was trustworthy.

This invention has been sent to Hythe to be experimented upon, but I would suggest that a barrel, some targets, and 1,000 rounds of ammunition should be sent to each corps in the United Kingdom; to be there tested and reported on. And that these reports, supplemented by the one from Hythe, should form the basis for the decision as to the advisability of introducing into the Service this method of practising correct aiming. Perchance a consensus of opinion would be thus obtained, sufficient to induce the Treasury to grant the necessary funds

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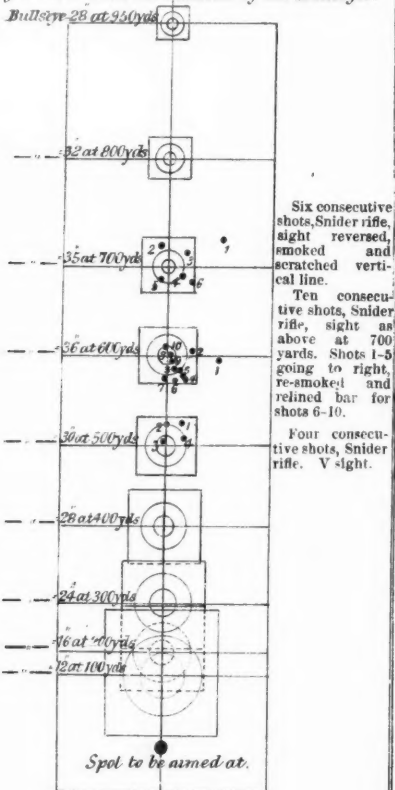
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MORRIS'S PATENT TARGET.

P1.VII.

DIAGRAM B.

Snider Tube. Sights to be elevated for the various distances, and hits should be numbered on Target as shot. The sizes of the Targets are arranged so as to make the shooting more difficult as the sights are elevated. The centres are twice the diameter, and the Targets three times the diameter of the Bullseyes.



Muzzle to be 10 yards from Target.
Care must be taken to place the Target perpendicularly.

25th March, 1882.

Penetration. Through a $1\frac{1}{2}$ inch plank, and bullets half through a second $1\frac{1}{2}$ inch plank.

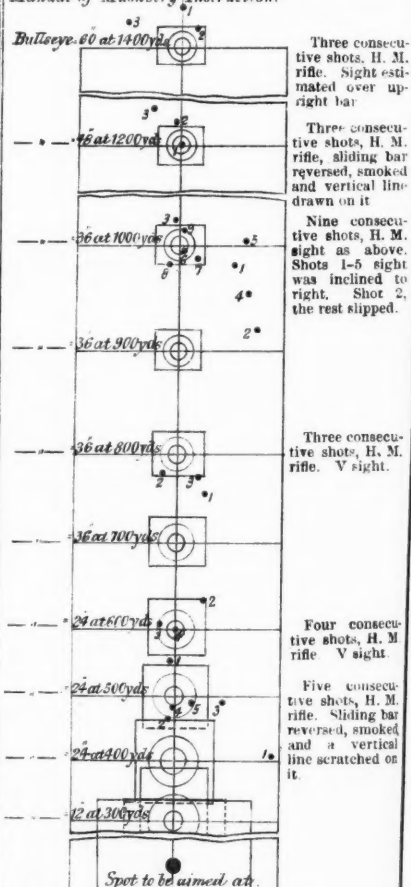
The above 29 shots fired without cleaning barrel.

Position. From the shoulder, barrel generally on a rest.

CHAS. K. BROOKE, Major.

DIAGRAM C.

Martini-Henry Tube. Sights to be elevated for the various distances, and hits should be numbered on Target as shot. The sizes of Targets up to 1,000 yards are calculated according to the dimensions prescribed in the Manual of Musketry Instruction.



Muzzle to be 10 yards from Target.
Care must be taken to place the Target perpendicularly.

25th March, 1882

Position. From the shoulder, barrel generally resting on a rest.

Penetration. Apparently the same as with Snider rifle.

CHAS. K. BROOKE, Major.

VII.

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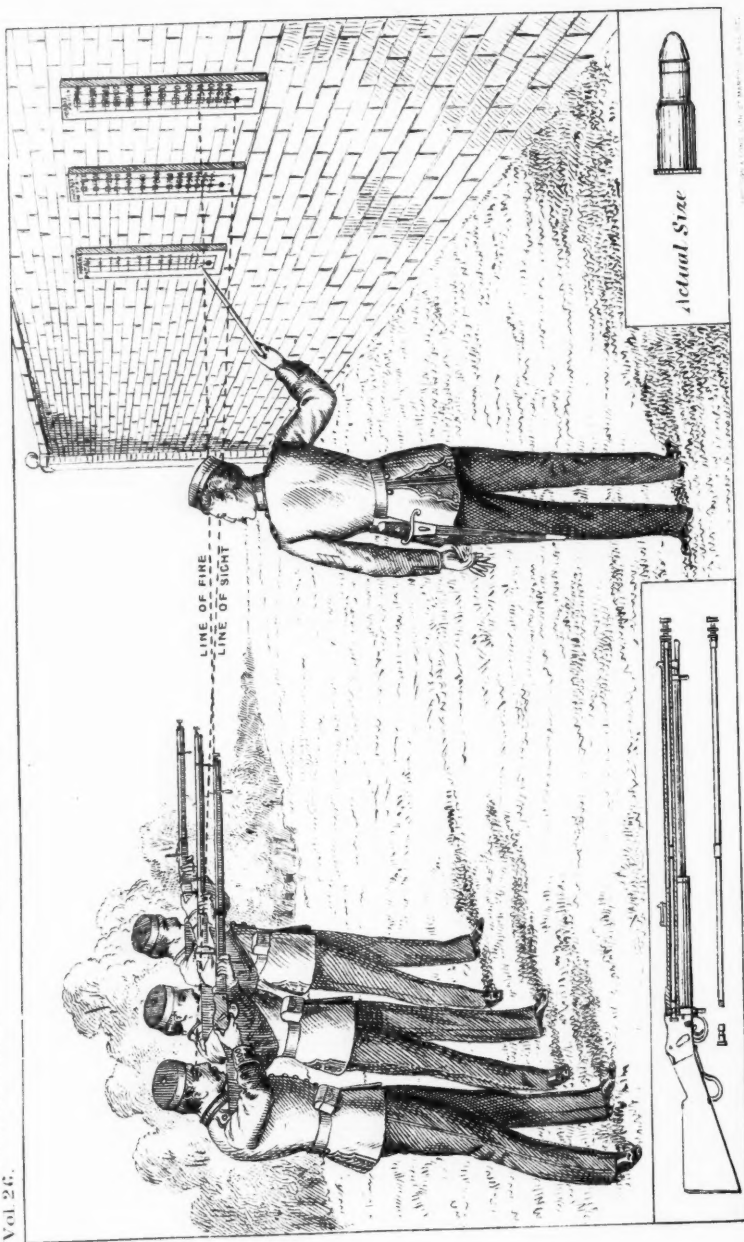
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RICHARD MORRIS'S SYSTEM OF AIMING AND SIGHTING

PLATE VIII



NOTE.—For Explanation of Targets see plate 7

—the amount would not be large, as each barrel only costs about 1*l.*, and 1,000 rounds of ammunition about the same sum.

Before concluding, I will venture to say, with all due respect for the great and useful work that the School of Musketry has performed in the past, that its present course of instruction requires to be seriously remodelled. For example, if reference be made to the text-book in use at Hythe, dated 1880, and in which "Officers who are sent to the School of Musketry to qualify for the appointment of Instructor" are examined: it will be seen, that out of 150 pages of letter-press, 38 are devoted to a description of ancient arms ranging from the stone age to 1842, and that 40 give an elaborate account of the invention and making of gunpowder. Surely all this matter, though interesting in itself, is out of place in a short two months' course of instruction. The training at Hythe should be based, not on the idea that the Officer is to be a Drill Instructor in Musketry: but that the School should give him an opportunity of gaining a fuller knowledge of the properties of the rifle, and how to use it to the best effect under all circumstances. This should be taught him with the aid of practical demonstrations of the effect of rifle fire under a variety of circumstances, and up to the extreme limit of the range of the rifle. Individual excellence in shooting must be insisted on as a necessary qualification for a certificate—for a bad shot cannot inspire confidence in his teachings.

Lastly, interesting lectures on Fire Tactics should be added to the course, so that Officers should leave the Institution imbued with the idea, that skilfully to train their men to fire accurately in the field, and there to be able to conduct and regulate their fire,—is the object and aim of all musketry instruction: and that to carefully supervise or elaborate rifle matches is only an incident in their usefulness.

In conclusion, I will sum up shortly the changes which I consider it desirable to make in our present system of musketry instruction.

Summary.

1. Competition to be abolished, and replaced by a strict annual examination in firing, conducted by the General Officer commanding the district; whose report, together with a simple annual return, is to be forwarded to Head Quarters, and to form the means of estimating the musketry efficiency of a regiment.

2. Musketry to be carried on throughout the year, but chiefly in the autumn, winter, and spring months: the summer being left clear for drill, tactics, and field firing.

3. Musketry instructors to be abolished, and companies to be exercised entirely under the command of their own Officers.

4. The drill part of the instruction of recruits to be added to the rest of the drill of soldiers and carried out under the Adjutant. The theoretical instruction and the target practices to be supervised by a specially selected Officer, who should receive extra pay while so employed.

5. Firing practices to be progressive in character in order to obtain

Course of instruction at School of Musketry to be remodelled.

a better classification of the men and to render the firing more interesting.

6. The majority of the practices to be carried out in "Marching Order."

7. Men not to be allowed to fire at long ranges if they are not good shots at the short ones.

8. An issue of man-targets to be made to each battalion, and to be maintained regimentally by an annual grant of money.

9. An increased issue of at least 120 rounds of ball ammunition and to be expended as follows:—

80 rounds in Target practices.	
5	" Independent firing.
5	" Volley "
30	" Field "

10. Men to be classified—those in the 1st class to receive a penny a day, marksmen a money prize in addition; while a money grant should be made for prizes for men in the 2nd and 3rd class.

11. Regimental rifle clubs to be encouraged in all ways, and to receive a round of ball ammunition for every bullet and cartridge case returned to store.

12. In field firing, the ranges to be disguised as much as possible—the practice to be conducted entirely by the Commanding Officer—and the companies to be exercised at a war strength.

13. The musketry instructions to be improved; and instructions with regard to the limits of individual, group, or mass firing—the points to aim at under all circumstances—and the expenditure of ammunition in the field in relation to the objective—to be inserted in them. A chapter on fire tactics, and tables, and diagrams showing the chances of hitting men at different distances, and in different formations, should also be added.

14. The course of instruction at Hythe to be remodelled, more attention being paid to the field training of Officers.

The reforms here advocated may appear to be too sweeping, but in all I have striven to inculcate the principle—that musketry instruction should at all times keep clearly in view as its sole object—the training of men to fire effectively on the battle-field, at other men.

APPENDIX A.

3RD CLASS PRACTICES.

No. of Practice.	Distance.	Position.	Target.	No. of consecutive Rounds.	Conditions to fulfil.	Remarks.
1	Yards. 150	Standing	3rd class	5	Conditions should be calculated at School of Musketry, Hythe, from experiments and data in their possession.	<i>Obligatory practices to be carried out annually by all men in 3rd class.</i>
2	150	Kneeling	3rd class with man figure	5		
3	150	Any position	Man figure	5		
4	150	Kneeling	Kneeling figure	5		
5	200	Standing	3rd class	5	Conditions should be calculated at School of Musketry, Hythe, from experiments and data in their possession.	<i>Progressive practices.</i>
6	200	Kneeling	Man figure	5		
7	200	Any position	Moving man figure	5		
8	250	Kneeling	3rd class	5		
9	250	Any position	Man figure	5	N.B.—When firing at the figure targets, all shots striking the central position of the bust, shown by a thin oval ring, should count double.	<i>Examination practices to test a man's efficiency after he has gone through the preceding ones.</i>
10	300	Kneeling	3rd class	5		
11	300	Any position	Moving man figure	5		
12	400	Do.	2nd class	5		
13	300	Do.	8 man figures	Independent firing, 5	N.B.—When firing at the figure targets, all shots striking the central position of the bust, shown by a thin oval ring, should count double.	<i>Obligatory practices to be carried out with last 10 Rounds of Target Ammunition. Men to be formed into groups of 8.</i>
14	300	Do.	Do.	Volley firing, 5		

2ND CLASS PRACTICES.

No. of Practice.	Distance.	Position.	Target.	No. of consecutive Rounds.	Conditions to fulfil.	Remarks.
1	Yards. 150	Standing	3rd class with man figure	5	<i>Vide</i> remarks in same column in 3rd Class practices.	Same as in 3rd Class practices.
2	200	Standing	Man figure	5		
3	200	Kneeling	Moving man figure	5		
4	200	Any position	Head	5		
5	250	Standing	3rd class	5		
6	250	Kneeling	Man figure	5		
7	250	Any position	Moving kneeling figure	5		
8	300	Do.	Head	5		
9	300	Do.	Falling man figure	5		
10	400	Kneeling	2nd class	5		
11	500	Any position	Do.	5		
12	600	Do.	1st class	5		
13	300	Kneeling	8 man figures	Independent firing, 5		
14	300	Do.	Do.	Volley firing, 5		

1ST CLASS PRACTICES.

No. of Practice.	Distance.	Position.	Target.	No. of consecutive Rounds.	Conditions to fulfil.	Remarks.
1	Yards. 200	Standing	3rd class with man figure	5	<i>vide</i> remarks in same column in 3rd Class practices.	Same as in 3rd Class practices.
2	200	Kneeling	Head	5		
3	250	Standing	Man figure	5		
4	250	Kneeling	Moving kneeling figure	5		
5	300	Any position	Head	5		
6	300	Kneeling	Falling man figure	5		
7	400	Do.	2nd class	5		
8	400	Any position	Moving two man figures	5		
9	500	Do.	2nd class	5		
10	600	Do.	Do.	5		
11	700	Do.	1st class	5		
12	800	Do.	Do.	5		
13	400	Do.	8 man figures	Independent firing, 5		
14	400	Do.	Do.	Volley firing, 5		

The CHAIRMAN: You have heard, gentlemen, an extremely interesting paper, on a subject the importance of which cannot be exaggerated, and therefore invites consideration from all who are interested in the training of our men in field firing. I hope there are many here who will favour us with their views on the subject. It is clear that though the subject of the lecture is one which to a certain extent appears to criticize unfavourably existing regulations, yet it has met with the approbation

of the Committee who select the subjects of lectures delivered in this theatre. Consequently, while we should all naturally desire to avoid criticizing the powers that be, still at the same time a little freedom of discussion upon this subject cannot result otherwise than in advantage to the Service, and this is particularly the case at a moment like the present, when the whole subject of field firing and fire tactics is occupying the attention of every soldier from the youngest to the oldest. Personally, I am delighted to bear testimony to Mr. Morris's invention, as I have seen it applied in more than one instance, and I believe there is one Officer present who has already tried it with his battalion with very successful results.

Colonel PHILLIP SMITH, Grenadier Guards: I cannot say I have tried Mr. Morris's invention, but I have tried a much more elementary one—a small block about 3 inches long in which there was a small cap inserted, which made very fair practice at one range: but having a high opinion of the value of the invention, I was advised to make an experiment with some bad shots. I accordingly selected four bad shots, drilled them carefully with this invention for about a fortnight, and then took them on the practice ground to test what improvement was the result. I tried them at four distances: I cannot exactly recollect the number of points made, but I do remember that in the four distances they made 100 points better shooting than they did three months before at their annual practice. Having seen the great interest the men take in it, and the value which it has in keeping the subject of musketry before their minds, I have not the smallest doubt that the shooting in the Army will be enormously improved if this invention is introduced. One thing of great importance, of course, is that you should keep the subject before the men as much as possible, for if you practise men for a fortnight during the year, and leave them without anything to recall the subject to their minds for eleven and a-half months, it is quite impossible for them to become good shots. Major Oldham tells me the invention I used is that by Eley.

Sir LUMLEY GRAHAM, Bart.: I was waiting for some one actually in the Service to speak. No doubt musketry instructors and commanding officers will be far more fit to speak on the subject than myself. If, however, you will allow me, I will make a few remarks. Allow me first of all to compliment my friend Major Brooke on his very excellent lecture, every word in which is worth weighing. There may be differences of opinion about his conclusions, but I think most of us will agree as to the main principles which he has advocated. First of all with regard to the musketry instructions being given by the Company Officers, and the Captain being responsible for it, that I think is the mainspring of the whole thing. Then about the abolition of the musketry instructor, no doubt he has been a very valuable Officer, but I do not think he is required any longer. I hope before long we shall see the musketry instructor abolished. The excessively practical nature of the instructions recommended by Major Brooke I think is very much to be commended. His system is founded mainly on the system in use in the German Army; and though we may not like to copy the German Army in everything, in that we may certainly copy it with advantage. The subject, we all know, is now under consideration with a view to reform, and therefore may be fully discussed in this hall without any impropriety. The first thing you have to do before you invent a new system of musketry instruction is to make up your mind as to exactly what you want. Of course, first of all you wish to send men to hit their enemy in war. Now no doubt the system at present in use in the British Army does not teach them that; it teaches them to fire more or less well at a target, but as Major Brooke says, they do not find targets to shoot at in the field; they find things that look very different indeed to targets, such as we use; they find men standing up, men lying down in every sort of position, and their eyes ought to be accustomed at practice to the marks they are likely to meet with in action. Therefore I have no doubt the lecturer is right in recommending the great variety of target which is in use in every army except ours, and which teaches men really to use their rifles in a practical way. But first of all we must determine what nature of fire to use under various circumstances, and that depends much upon tactical considerations. Major Brooke has very wisely recommended that lectures should be given at Hythe with regard to the tactical use of fire-arms that would teach Officers how to direct and control the fire of their men, and the same instructions ought to be carried on in regiments, and thus Officers would learn how to use

the fire of their men in the way best suited to every occasion; for instance, how far individual fire can be trusted; to what ranges volley firing may be appropriate; to what ranges rapid independent firing should be restricted; and all that sort of thing; but I imagine it depends a good deal upon the result of experiments what decision our authorities adopt as to the different kinds of fire to be recommended for use at the different ranges. I do not know whether that sort of thing has been gone into at Hythe of late years; but I know on the Continent it has been most carefully considered. Since the war of 1870, and since the Russo-Turkish war, there has been rather a mania for mass firing at long ranges, because we are told how severely the Prussian Guard suffered at long ranges when they unduly exposed themselves in formations unsuited to the ground in attacking the position of Saint Privat: and how fearfully the Russian troops suffered at long ranges when attacking the fortifications at Plevna: so that people rather begin to run away with the idea that though individual firing at long ranges is of no great use, mass firing at longer ranges may be very effective indeed. But foreigners have been carrying on a series of valuable experiments in that matter; particularly the Germans, who do everything in a complete way; and if you will allow me I will refer to some notes that I took of an experiment that has lately been made to illustrate the value of long-range firing by bodies of troops under conditions likely to be met with on service. This was in Germany, and is described in a book called "Observations on Infantry Fire," written by a Prussian Field Officer. He describes some trials made with two Companies, each consisting of 4 Officers, 18 non-commissioned officers, and 180 men, made up of the best marksmen of two battalions, and almost without exception adroit and active men, and thoroughly trained soldiers: the Officers were perfectly well instructed, and accustomed to direct the fire of masses; they were well acquainted with the ground, and knew the distances fired at; the fire discipline was satisfactory, at all events, as an eye-witness says, twenty times as good as it would have been in action. They fired at four marks; the first to represent a battalion in line lying down, consisting of a series of targets 18 inches high by 8 feet broad: the distance 990 yards; mode of firing volleys, by groups of three or four files kneeling without a rest; number of shots fired 6,000; hits 4. By calculation you will find that the number of rounds fired per man was over 16: and according to the opinions of those who have taken part in the latest wars in Europe, you may reckon that it requires from ten times to twenty times as many shots in action to produce the same results as at peace practice. I cannot form any opinion as to that, but that is what the best authorities seem to say. I take the mean of this, between 10 and 20, namely 15, and multiply the number of rounds per man in peace practice by this number to arrive at the number of rounds required in war to produce the same result. In the case of this first mark the number of rounds required to produce the result of hitting four men, would be 240 rounds per man.

The second mark represents a company column standing up, and consists of three lines of targets, each composed of six sections 6' x 8', the lines being 6½ yards apart. Mode of firing same as before. The distance is 990 yards, the number of shots fired is 770, and 26 hits: that is, the number of shots fired per man was over 2, and the rounds required to produce the same result in war would be 32 per man.

The third mark fired at represents the same thing as the second, but at a distance of only 825 yards. Mode of firing as before. Shots 536, and 40 hits, or 1½ rounds per man; and that would represent in war, to produce the same result, over 22 rounds.

The fourth mark represents a battery of artillery of six pieces, and consists of 40 figure targets in first line, of 36 Cavalry targets in second line, the first line representing the guns, the second the wagons at the regulation distances. The figure target, representing a soldier, is 6 feet by 18 inches: the Cavalry target, representing a horseman, is 8 feet 4 inches square. The distance of the guns (first line) was 1,210 yards. The mode of fire as before. Six thousand shots were fired: 20 gunners in first line, and 20 horses in second line were hit. Total 40 hits. Over 16 rounds per man fired: which would represent in war, by the same calculation, nearly 250.

The result of this practice seems to show, what the Staff Officer in this book that

I am talking of enlarges upon, that rifle fire (even the fire of masses) at long ranges is practically useless, and not to be allowed, unless the enemy expose themselves in an imprudent manner, as was the case at Saint Privat; or unless you have, like the Turks, an unlimited allowance of ammunition, and the enemy, like the Russians, also expose themselves unduly, as was the case at Plevna. I will not trespass upon your time any longer; I mention this merely as an illustration of the necessity which is no doubt felt by our authorities for making up their minds as to the proper firing tactics to be pursued, and for basing this new system of musketry instruction upon them, as regards its more advanced branches, including field firing.

The CHAIRMAN: We shall be glad to hear the view of any Musketry Instructor, who can give us a dispassionate view of this subject.

Major OLDHAM, Deputy Assistant Adjutant-General, Cork: We all have to thank Major Brooke for his interesting lecture, and more especially interesting to us Musketry Instructors. I do not wish to make any remarks on his proposals further than to correct a mistake which I think he made when explaining the way in which our trained soldiers expend their 90 rounds of ball ammunition annually. If I mistake not, he distributed them as follows: 60 rounds individual firing, 5 in volleys at 400 yards, 5 in independent firing at 400 yards, and 20 in skirmishing; whereas we now fire 15 rounds in volleys at 400, 600, and 800 yards (5 rounds at each distance), 5 in independent firing, and 10 in skirmishing, or 20 in field firing, if practised. I have not seen the result of the volley firing at 600 or 800 yards, except at the School of Musketry at Hythe, where it was certainly satisfactory. With regard to the "cartridge" alluded to by Colonel Philip Smith, which, by-the-by, is an invention by W. Morton, carrying Messrs. Eley's caps, I consider it most useful. At Cork, I have been present when men of the 2nd Battalion Grenadier Guards have been practising with it. The system they adopt is as follows:—in the winter months, when the annual course is not proceeding, all 3rd class shots, and indifferent shots not on duty, fire from 15 to 20 rounds daily, the Instructor of Musketry and Sergeant Instructor being present. The result is, that this battalion has few 3rd class shots, and their figure of merit is very good. It struck me as being such a useful invention that I mentioned it to several of the Staff Officers at the School of Musketry, when I was there a few days ago.

Sir LUMLEY GRAHAM: Are there experiments carried on at Hythe of the nature of that which I was describing?

Major OLDHAM: There are. I think the Inspector-General is most anxious to carry out those very experiments that you mention.

Lieut.-Col. FARRELL: I would venture to ask if, in the system now in vogue in the German Army, great attention is not given by the Officer Commanding the Company, who is also its Musketry Instructor, to the firing of each man when *before the target*, and if it is not thought advisable by the Officers in that Army to so instruct every man where to aim beforehand, as to enable him when he fires to hit the target, and thus by degrees to get confidence enough in his own judgment to make good shooting without the aid of coaching.¹

In America, also, I have understood that great attention is paid to coaching, and allowing the men to gradually acquire confidence in themselves before they have to act on their own resources, and as in an engagement, I believe, the smoke from continued independent firing, &c., renders volleys at intermittent periods advisable, I am under the impression that the practical knowledge previously gained by each Officer while acting as a coach would be found useful to him on such occasions, and have helped him to obtain the entire confidence of his men.

Colonel LORD ELCHO, M.P., A.D.C.: I would say a word on one or two points that have arisen, first with reference to Mr. Morris's invention, and then as to what fell regarding long-range firing abroad from Sir Lumley Graham. As regards Mr. Morris's invention, it was brought before the Shooting Committee at the War Office. We tried it there, and it seemed to me one of the most useful

¹ See Sir Lumley Graham's paper on the "Training of Infantry for Battle," published in No. XXIV of the "Journal of the Royal United Service Institution," Pages 494-499 and 500.

inventions I ever saw. It was an absolute test, not only of a man's steadiness as far as pulling without a jerk and accuracy of aim, but also it enabled him to test in a small room what position was the best to get accurate shooting at short ranges or long ranges; and I cannot but think that there could not be a greater service done for the Army than that every regiment should be allowed to have this mode of practice under cover or in any convenient place. These matters rest with the military authorities; and if the military authorities said it was absolutely necessary for the efficiency of the Army that such and such a thing should be done, the Treasury could not well refuse; and I am sure the House of Commons would not refuse either if the Minister of War were to go down and say that this is an invention necessary for the efficiency of the Army. I was so much struck by it that I brought the matter before the Council of the National Rifle Association; and after looking at it, and seeing it tried after our last General Meeting, a resolution was passed that it would be desirable to recommend the adoption of Mr. Morris's tube to all volunteer corps. I shall certainly endeavour to induce the regiment with which I am connected to purchase a number of these tubes for practice, and I am perfectly certain the result will be what Colonel Smith has found by practical experience in his own regiment.

The other point to which I wish to refer is what Sir Lumley Graham said about the results of long-range firing as tested in Germany. I am inclined to think one of three things, or perhaps all three together, happened, seeing what little result was obtained from such an enormous expenditure of ammunition: namely, that the rifle was bad, or the rifleman was bad, or that the position, which was a kneeling position, and which is the very worst for actual practice, was the cause. Because, in connection with a range finder, I have been trying experiments this autumn at extreme ranges on the sand. I do not pretend to be a good shot, only an average shot, but with the Martini-Henry rifle at 2,000 yards I would engage that any good shot practising at that distance would put every bullet into a space not larger than Whitehall Yard; therefore I am very much surprised to hear that such bad results were obtained from the German experiments at long-range shooting. I cannot but think that trained men and soldiers working in knots and groups, with distances properly given them, ought, even at extreme ranges, to produce very different results from those referred to by Sir Lumley Graham.

Lieut.-General A. J. HERBERT, C.B.: I entirely agree with Lord Elcho in what he said about long-range firing. I have tried, when in command at an inspection, ordering men to fire volleys at 800 yards. I have found that they made not the very indifferent practice mentioned by Sir Lumley Graham, but that, as well as I can remember, about 1 out of 8 hits; which is not so bad. In 1854, a good many years ago, I was employed to instruct the battalion to which I belonged in rifle shooting with the Minie rifle, before the appointment of musketry instructors. At Sandown, we were firing with a Minie rifle at 900 yards, I had a Company of about 60 men, and out of the 60, we put 10 or 12 shots into one of those long canvas targets used at that time. This shows that there may be very much better practice made than in the experiments referred to. With regard to the tube, when I was at the Horse Guards some years ago, a tube to be used with a light bullet inside the Snider was sent home from Vienna by Colonel Goodenough, and was remitted to Hythe; at the time, I thought it a remarkably clever invention, but the Hythe authorities did not approve of it. They thought the men might hurt themselves by carelessness, unless very well looked after. It was not exactly sighted in the same way as Mr. Morris's tube, and the targets were not on his system, but it was fitted into a barrel, and so fired, and the sights were set so many inches instead of yards. Another disadvantage they said was, that as there was no recoil, it did not teach men to withstand the recoil. A great many remarks have been made, and letters written to prove, that unless men are constantly practised, they soon forget how to aim and shoot efficiently. But what are we going to do with the Reserves? The Reserve men leave the Army, and after perhaps four or five or even nine years may be called upon to fight, and yet those men for ten years will probably never have fired a shot since they left their regiment. How can we expect that those men will keep up their practice when they are out of the Army, unless they go into the Volunteers or Militia?

I am therefore a great advocate that every Reserve man should be obliged to join either a Volunteer Corps or a Militia Corps, so that he may, at all events, keep up his firing as well as his drill.

The CHAIRMAN: We may consider the discussion as closed, and I feel it part of my duty as Chairman to take the sense of the meeting on a point on which I feel perfectly certain that unanimity will prevail, namely, our appreciation of Major Brooke's lecture. I am convinced that not only the lecture, but the discussion that has followed, must be productive of good, even at a moment like the present, when any decision would of course be premature on the part of any meeting or any individual, as so many experiments are going on. Still, while leaving the question open we may agree upon general principles. We can none of us say that any one system is absolutely the best. But I cannot help thinking that the tendency of the opinions of those who have spoken, and certainly of the majority of those with whom I have talked on the subject, leans towards exacting as obligatory from every man good shooting up to a certain distance: that for everything over that distance there should be an encouragement offered in the shape of prizes, and advantages either in rank or in pay: therefore that all General Officers in command of a district, and all Officers in command of a regiment, should exact, that up to a certain point every man should shoot with intelligence and precision: and afterwards that good shots should be *encouraged* to distinguish themselves. You cannot get a large body of men to shoot well beyond a certain point; afterwards it must rest with the individual. You can never get a man beyond the average unless his natural aptitude is brought into the scale so strongly, that he merely requires the encouragement of the prizes that are offered to become a marksman; a fair proportion of which every Officer commanding a regiment certainly hopes to see in every section of every company. With regard to this invention of Mr. Morris's and his target, I think that as the future Quartermaster-General, General Herbert, is present, we shall look to him to provide galleries or rooms in barracks where it could be partially developed; because the great difficulty—as I know of my own personal knowledge—has been the possibility of carrying out the commonest pistol practice in barracks with security. At Chelsea barracks there is a small passage which has been utilized once or twice; but I believe any attempt at shooting outside that has been attended with danger; and people in the neighbourhood have complained, fearing either that a bullet may go too near a window, or that too much noise may be made at certain hours in the day. I cannot help thinking it is most important that during the winter months there should be attached either to the canteen or recreation rooms a small shooting gallery, where men should be encouraged to have matches amongst themselves, to enable them to familiarize themselves with Mr. Morris's tube, which I look upon as one of the most important inventions in connection with musketry since the time that rifle practice has been brought so prominently into notice. I conclude that I have the sanction of this meeting for thanking Major Brooke most heartily for his lecture, and also the gentlemen who have been good enough to take part in the discussion.

Major BROOKE: I am much obliged to Major Olcham for pointing out my error with reference to the number of rounds expended in volley firing. I had not corrected my proof up to date: my lecture was written in April last year, before these 15 rounds were allotted to volley firing. To advocate dividing the training of the soldier is hardly what I intended to convey in the few words I spoke on this subject: what I said was, "The training of the recruits should be carried out by the Adjutant, so long as he occupies his present position; while the target practices and theoretical teaching should be conducted by a specially selected Officer, who might receive extra duty pay when so employed." This entirely refers to the recruits, not to the training of soldiers generally. Lieut.-Colonel Farrell spoke relative to the necessity of coaching. I quite admit that in the training of men there must be a great deal of coaching; but coaching takes place always: what I advocate is that sometimes it should cease, and the men be left to their own initiative: give them a target and rifle and five rounds, and let them alone; this hardly ever takes place now. With regard to "mass firing," the Germans and French have completely adopted the idea, and issued regulations on the subject; it is decided as a matter of fact that it is never to be made use of as a rule by anyone

under the rank of a Commanding Officer of a battalion, because it leads to such a very large expenditure of ammunition: and the object must be a large one to make it useful at all. Therefore it is quite within the power of anyone who finds out a large object on the field to communicate with his Commanding Officer, and ask permission to open this special kind of fire. During manœuvres abroad I have seen it made use of in battalions when at distances of from 1,200 to 1,400 yards from the enemy, whose men had exposed themselves on a level plain in such a way that the "mass firing" would certainly have decimated the regiment. There have been certain calculations made abroad, giving the number of bullets which will drop into a certain space of ground at various distances. From these data you can make a rule of thumb calculation, which will enable you to say: "If I fire off so many rounds I have a chance of hitting so many men." I want to see these tables drawn up by those who have the means of conducting the necessary experiments, and that we should have the benefit of this knowledge.

After the lecture, Mr. Morris explained the mode of inserting his tubes into the Martini-Henry and Snider rifles, and made some good practice across the theatre at targets fastened on planks.

A squad at firing practice is shown on Plate VIII, as also the tube and cartridge (full size).¹

¹ Mr. Morris explained to General Herbert, Lord Chelmsford, and other members, after the meeting, his apparatus for un-capping, re-sizing, re-capping, and re-filling ordinary cartridge cases, whereby a great saving in the expense of cartridges is effected. A description of the apparatus will be given in a future number.

